

6350

QH  
84.3  
N714  
1974  
Sect.2  
CEIC

1973

ENVIRONMENTAL MONITORING AND BASELINE DATA

Compiled under the

SMITHSONIAN INSTITUTION

ENVIRONMENTAL SCIENCES PROGRAM

Temperate Studies

Section II

Rhode River, Maryland



Edited By: David L. Correll



QH  
84.3  
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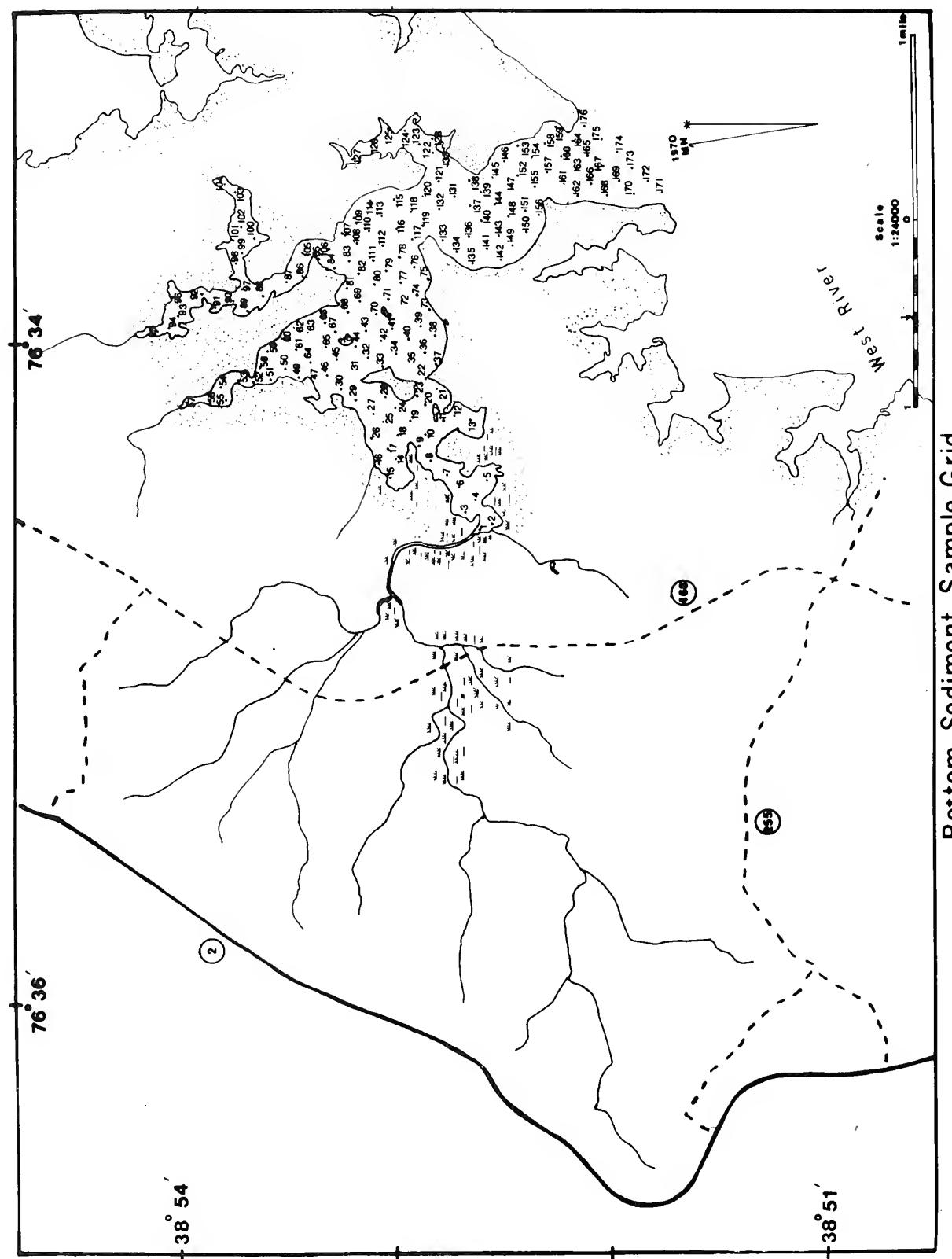
435

Rhode River Bottom Sediment Analysis - 1972-73

Technique: Samples of the surface layer of bottom sediments were taken with an Ekman dredge. Samples were analyzed for size distribution of the particles by standard techniques for particles of sizes over 0.5um in diameter (Folk, R. L. (1961). Petrology of Sedimentary Rocks, Hemphills, Austin, Texas. Oxidizable organic matter was determined by loss of dry weight upon oxidation with 30% hydrogen peroxide (Pierce, J. W.; Nelson, D. D.; and Colquhoun, D. J. (1972). In Shelf Sediment Transport, Ed. by Swift, Duane, and Pilkey. Dowden, Hutchinson, and Ross; Straoudsburg, Pa. pp. 281-306). Mineralogy was determined as described under soils analysis section of this report.

Principal Investigator: Jack W. Pierce Department of Paleobiology, National Museum of Natural History, Smithsonian Institution.

Research Funding: Smithsonian Research Foundation and the Program for Research Applied to National Needs of the National Science Foundation.



## Bottom Sediment Sample Grid

Bottom Sediment Analysis for Percent of Dry Weight Present as Organic Matter  
(1972-1973)

Sample Numbers (from sample grid map)	Percent of particulate present as organic matter.
4	0.278
6	0.262
7	0.425
8	0.299
10	0.361
19	0.417
24	0.475
27	0.530
29	0.272
42	0.337
112	0.362
148	0.206
160	0.229
174	0.167

Table Muddy Creek (Tidal) Bottom Sediment Analysis Data - 1973

Sample Number	Latitude (North)	Longitude (West)	Size Class	Montmorillonite illonite (μm)	Percentage of mineral matter present as:				
					Kaolinite	Gibbsit	Chlorite	Quartz	K-spar
MC-1	38°52'33"	76°34'33"	2-64	51	14	11	1	1	23
MC-1	38°52'33"	76°34'33"	0-2	58	12	10	1	1	18
MC-2	38°52'43"	76°34'36"	2-64	57	12	9	1	1	19
MC-2	38°52'43"	76°34'36"	0-2	56	12	10	1	1	19
MC-3	38°52'59"	76°34'38"	2-64	50	7	14	2	2	25
MC-3	38°52'59"	76°34'38"	0-2	63	12	11	2	1	10
MC-4	38°53'00"	76°34'45"	2-64	41	5	10	1	1	40
MC-4	38°53'00"	76°34'45"	0-2	46	8	20	2	3	21
									0

Table Bottom Sediment Mineralogy 1972-73

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Sample Number (from Sample grid map)	Size Class ( $\mu\text{m}$ )	Relative percentage of mineral matter present as:						Plagioclase
		Montmorillonite	Tillonite	Kaolinite	Gibbsite	Chlorite	Quartz	
2	0-2	68.9	13.1	8.2	2.5	2.0	3.6	0.8
2	2-50	40.8	11.2	8.7	1.8	2.8	17.6	3.8
8	0-2	47.6	19.5	12.8	2.6	5.2	9.8	0.7
8	2-50	63.2	13.8	10.1	1.2	3.3	5.7	1.8
27	0-2	33.4	22.1	19.0	3.0	8.4	1.2	1.2
27	2-50	-	-	-	-	-	-	-
22	0-2	14.4	61.6	7.8	1.6	3.6	10.3	0.3
22	2-50	8.5	51.2	14.9	1.6	3.4	13.6	3.5
43	0-2	22.1	8.4	11.9	3.3	5.3	43.2	-
43	2-50	-	-	-	-	-	-	-
52	0-2	8.3	11.1	19.4	4.2	4.2	48.6	4.2
52	2-50	-	-	-	-	-	-	-
56	0-2	41.9	8.6	18.3	1.1	-	30.1	-
56	2-50	16.1	6.3	10.7	0.9	1.8	59.8	3.6
72	0-2	34.4	9.8	16.4	1.6	4.9	32.8	-
72	2-50	23.5	12.3	8.6	-	7.4	40.7	4.9

(Continued)

Sample Number (from Sample grid map)	Size Class (um)	Relative percentage of mineral matter present as:						Plagioclase
		Montmorillonite	Illonite	Kaolinite	Gibbsite	Chlorite	Quartz	
96	0-2	36.7	45.1	8.5	0.4	1.1	6.3	0.9
96	2-50	24.1	38.2	11.4	0.2	0.4	20.9	1.8
114	0-2	45.9	30.0	13.0	0.4	2.1	7.2	0.4
114	2-50	53.8	23.5	7.4	0.5	2.3	10.5	1.0
127	0-2	48.6	24.6	6.6	1.3	2.4	14.9	1.1
127	2-50	33.0	40.0	11.4	1.7	1.9	10.4	0.9
152	0-2	48.2	15.9	15.9	4.6	6.8	31.8	6.8
152	2-50	18.8	15.3	14.1	3.5	2.4	38.8	2.4
163	0-2	39.3	31.5	12.2	0.5	4.2	11.4	0.5
163	2-50	38.1	19.7	9.6	0.5	2.2	28.1	0.9
174	0-2	18.6	45.7	17.4	0.9	4.4	1.2	0.8
174	2-50	17.4	30.7	8.3	3.1	1.9	34.6	1.1

Bottom Sediment Particle Size Distribution  
 (Taken in 1972, analyzed in 1973)

Sample (See grid map)	62	Cumulative percent weight in size class greater than (um)					Percent by weight present as:				
		32	16	8	4	2	1	0.5	Sand	Silt	Clay
1	21.50	33.08	44.66	53.11	62.33	.00	.00	.00	21.50	40.83	37.67
1A	27.22	35.64	45.11	56.61	66.68	.00	.00	.00	27.22	39.45	33.32
2	39.10	50.40	59.23	67.30	74.91	.00	.00	.00	39.10	35.81	25.09
2-0	43.26	49.71	54.45	60.85	66.09	70.96	.00	.00	43.26	22.83	33.91
3	28.21	33.88	41.31	50.34	61.88	.00	.00	.00	28.21	33.67	38.12
4	21.29	32.26	42.94	54.80	65.10	.00	.00	.00	21.29	43.81	34.90
4-0	11.27	19.76	28.13	37.21	46.50	53.64	.00	.00	11.27	35.23	53.50
5	10.15	13.73	37.69	49.40	50.07	.00	.00	.00	10.15	39.93	49.93
6-0	38.57	42.68	57.06	53.73	59.29	64.17	.00	.00	38.57	20.72	40.71
6	39.16	45.55	52.77	62.36	63.26	.00	.00	.00	39.16	24.10	36.74
7	18.28	26.86	36.12	44.33	53.33	.00	.00	.00	18.28	35.04	46.67
7-0	15.76	20.12	24.75	32.63	41.46	48.02	.00	.00	15.76	25.70	58.54
8	38.81	41.73	49.36	56.19	63.92	.00	.00	.00	38.81	25.11	36.08

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )						Percent by weight present as: Clay Silt Sand				
	62	32	16	8	4	2					
8-0	5.84	11.02	15.93	23.38	31.97	38.95	.00	.00	5.84	26.13	68.03
9	34.95	42.20	49.01	55.19	63.20	.00	.00	.00	34.95	28.25	36.80
9-0	28.25	42.51	46.64	51.76	56.23	60.51	.00	.00	28.25	27.98	43.77
10	9.99	11.40	16.81	24.88	35.44	.00	.00	.00	9.99	25.45	64.56
10-0	1.59	4.36	6.72	15.92	19.14	34.63	.00	.00	1.59	17.54	80.86
11	89.42	90.98	91.64	92.33	93.44	.00	.00	.00	89.42	4.03	6.56
11-0	44.22	50.27	53.31	56.39	60.27	63.98	.00	.00	44.22	16.05	39.73
12	1.50	2.27	8.06	17.31	28.59	.00	.00	.00	1.50	27.08	71.41
13	1.58	5.56	13.05	23.09	36.19	.00	.00	.00	1.58	34.61	63.81
14	1.22	2.31	7.68	16.87	27.20	.00	.00	.00	1.22	25.98	72.80
15	2.70	12.31	25.91	36.20	49.64	.00	.00	.00	2.70	46.93	50.36
16	3.27	13.83	23.05	33.41	42.86	.00	.00	.00	3.27	39.59	57.14
17	.76	6.49	13.01	23.03	34.96	.00	.00	.00	.76	34.20	65.04
18	22.34	43.77	48.38	51.76	56.90	.00	.00	.00	22.34	34.56	43.10

Table

Sample (See grid map)	62	Cumulative percent weight in size class greater than (um)						Percent by weight present as: Sand Silt Clay
		16	8	4	2	1	0.5	
18-0	36.26	39.12	41.69	45.25	49.75	54.21	.00	36.26
19	3.01	8.29	13.92	22.32	30.88	.00	.00	3.01
19-0	3.68	7.31	11.45	14.72	25.95	33.61	.00	3.68
20	80.03	87.21	87.87	88.87	89.39	.00	.00	80.03
20-0	83.08	84.11	84.42	85.00	86.07	87.19	.00	83.08
21	3.31	18.16	27.79	36.36	47.91	.00	.00	3.31
22	86.13	91.87	92.26	92.34	92.65	.00	.00	86.13
22-0	90.23	90.56	90.80	91.34	91.68	92.10	.00	90.23
23	2.39	8.47	17.78	27.54	39.91	.00	.00	2.39
24	2.19	4.21	8.53	16.62	25.63	.00	.00	2.19
24-0	2.27	3.93	8.66	13.97	22.05	31.20	.00	2.27
25	.80	5.69	13.83	23.96	36.91	.00	.00	.80
25-0	.77	3.08	7.05	12.05	19.74	29.42	.00	.77
26	.53	2.25	6.90	12.97	24.61	.00	.00	.53
								24.08
								75.39

Percent by weight present as:  
Sand  
Silt  
Clay

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)					Percent by weight present as: Sand	Silt	Clay
	62	32	16	8	4			
27	1.34	11.32	15.05	21.03	29.54	.00	.00	1.34
27-0	1.25	4.05	8.48	15.34	21.60	30.66	.00	1.25
28	.93	4.51	8.47	15.19	27.88	.00	.00	.93
28A	87.21	88.32	89.19	90.01	91.14	.00	.00	87.21
28-0	1.83	3.79	7.54	13.19	21.03	29.82	.00	1.83
29	1.39	4.43	9.11	17.39	29.12	.00	.00	1.39
30	.47	3.40	8.59	16.21	25.33	.00	.00	.47
30-0	1.66	4.71	8.62	13.81	21.59	30.64	.00	1.66
31	37.70	39.46	43.02	48.91	56.36	.00	.00	37.70
32	.61	1.25	7.97	20.67	42.76	.00	.00	.61
33	85.08	86.33	87.51	88.34	89.50	.00	.00	85.08
34	1.23	4.04	7.47	10.54	28.65	.00	.00	1.23
34-0	.95	3.80	7.86	13.55	20.46	29.48	.00	.95
35	1.84	3.97	7.88	14.08	24.51	.00	.00	1.84

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
36	36.59	38.18	40.84	45.60	53.71	.00	.00	.00	36.59	17.11	46.29
37	83.73	85.90	87.04	88.13	89.50	.00	.00	.00	83.73	5.78	10.50
38	2.16	6.74	10.18	19.05	30.51	36.90	60.67	70.50	2.16	28.35	69.49
38-0	1.81	5.20	8.85	13.35	15.96	29.39	.00	.00	1.81	14.15	84.04
39	.94	4.85	6.85	13.36	23.68	.00	.00	.00	.94	22.74	76.32
40	.88	2.59	7.69	15.85	25.95	.00	.00	.00	.88	25.06	74.05
41	3.34	8.63	15.28	25.06	31.61	.00	.00	.00	3.34	28.27	68.39
42	.92	3.00	6.77	13.74	28.17	37.12	53.34	67.29	.92	27.24	71.83
43	27.57	29.36	33.53	39.70	47.71	.00	.00	.00	27.57	20.15	52.29
43-0	2.19	4.89	10.28	15.99	23.33	32.48	.00	.00	2.19	21.14	76.67
44	4.73	9.53	15.74	22.06	30.89	.00	.00	.00	4.73	26.16	69.11
45	11.86	14.36	19.27	24.36	34.36	.00	.00	.00	11.86	22.50	65.64
46	47.01	49.67	53.31	54.51	61.01	.00	.00	.00	47.01	14.00	38.99
46-0	46.47	48.68	51.10	53.95	57.81	62.81	.00	.00	46.47	11.35	42.19
47	78.26	79.38	81.04	82.56	84.84	.00	.00	.00	78.26	6.58	15.16
48	3.50	11.41	49.29	62.75	63.09	.00	.00	.00	3.50	59.60	36.91

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as:		
	62	32	16	8	4	2	1	0.5	Silt Sand Clay
49	83.48	85.85	87.38	88.79	90.17	.00	.00	.00	83.48
50	2.75	6.97	16.79	27.27	39.22	.00	.00	.00	2.75
51	3.69	8.83	18.94	29.36	40.24	.00	.00	.00	3.69
52	3.84	10.52	21.39	39.28	53.49	.00	.00	.00	3.84
52-0	2.74	8.70	19.40	29.52	37.90	44.23	.00	.00	2.74
53	3.24	11.00	22.89	30.80	40.42	53.78	68.80	77.81	3.24
54	.91	1.85	8.42	22.70	39.09	55.76	70.77	.00	.91
55	2.60	6.48	19.98	34.03	49.84	62.49	75.99	.00	2.60
55-0	1.97	8.00	18.67	30.41	40.51	48.06	.00	.00	1.97
56	3.02	6.44	13.02	28.17	45.78	58.88	70.94	78.48	3.02
56-0	2.20	5.83	12.03	21.96	32.23	40.78	.00	.00	2.20
57	13.56	16.12	26.81	41.94	56.44	69.37	82.19	.00	13.56
57A	27.10	30.53	40.30	52.46	64.35	74.99	86.80	.00	27.10
57B	20.12	24.16	35.56	49.74	62.22	74.05	85.26	.00	20.12
57C	44.03	44.80	50.89	61.32	71.30	79.46	.00	.00	44.03

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as: Sand Silt Clay				
	62	32	16	8	4	2					
58	79.40	82.10	83.83	85.38	87.00	90.88	92.89 .00	79.40	7.60	13.00	
59	79.61	84.01	86.28	87.46	88.43	91.11	31.99	53.38	79.61	8.82	11.57
60	31.44	39.47	45.70	50.03	54.51	63.18	.00	.00	31.44	23.08	45.49
61	1.04	1.68	9.13	15.30	26.63	41.96	56.85	65.31	1.04	25.59	73.37
61-C	.90	3.95	8.18	14.37	22.46	31.18	.00	.00	.90	21.55	77.54
62	85.79	87.63	88.67	89.48	90.55	92.51	95.06	.00	85.79	4.76	9.45
63	1.32	3.28	8.72	16.76	26.77	42.29	56.86	63.89	1.32	25.45	73.23
64	1.10	1.90	7.30	16.24	27.43	42.17	60.53	72.05	1.10	26.34	72.57
65	92.14	92.30	92.64	92.98	93.64	94.94	96.45	.00	92.14	1.50	6.36
66	83.16	83.90	84.84	85.85	87.34	88.41	94.61	.00	83.16	4.17	12.66
67	37.47	45.43	50.43	54.39	59.30	66.75	74.76	81.52	37.47	21.83	40.70
68	3.88	9.70	20.33	27.41	36.60	49.63	63.38	71.90	3.88	32.72	63.40
68-0	3.20	7.98	13.72	20.28	28.31	35.06	.00	.00	3.20	25.11	71.69
69	1.56	6.71	14.72	26.22	35.69	50.43	64.67	77.12	1.56	34.13	64.31

(Continued)

Sample (See grid map)	62	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )				Percent by weight present as: Sand Silt Clay					
		16	8	4	2						
70	87.54	88.56	89.29	89.60	90.72	92.76	.00	.00	87.54	3.18	9.28
71	20.70	34.74	38.32	47.94	53.58	62.92	73.88	79.42	20.70	32.88	46.42
72	12.52	17.02	24.29	30.88	39.96	53.52	67.39	76.31	12.52	27.44	60.04
72-0	9.96	13.17	18.62	24.59	31.32	37.57	.00	.00	9.96	21.36	68.68
73	88.04	89.50	90.15	90.61	91.76	92.90	95.48	97.12	88.04	3.72	8.24
74	84.71	86.12	87.43	88.02	89.62	91.34	.00	.00	84.71	4.91	10.38
75	83.48	90.59	91.99	92.07	93.21	93.41	.00	.00	83.48	9.72	6.79
76	10.43	18.75	28.48	34.65	41.82	52.07	.00	.00	10.43	31.39	58.18
77	2.39	5.56	15.01	21.35	36.92	48.28	62.15	72.78	2.39	34.53	63.08
78	64.06	67.22	70.02	72.99	76.54	82.08	88.44	92.65	64.06	12.49	23.46
79	2.26	10.05	16.00	28.28	35.91	49.57	.00	.00	2.26	33.65	64.09
79-0	1.78	8.18	13.99	23.76	32.77	38.03	.00	.00	1.78	30.99	67.23
80	1.80	7.26	16.20	25.88	36.96	50.61	64.43	74.35	1.80	35.16	63.04
81	24.58	38.15	46.57	50.86	61.59	66.21	.00	.00	24.58	37.01	38.41

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
82	47.63	55.17	58.76	63.16	67.25	73.83	.00	.00	47.63	19.62	32.75
83	78.32	83.42	86.02	87.36	88.52	90.24	.00	.00	78.32	10.20	11.48
84	80.18	82.79	85.20	85.91	87.98	91.34	.00	.00	80.18	7.80	12.02
85	87.68	89.41	90.71	91.47	91.65	92.23	.00	.00	87.68	3.98	8.35
86	17.74	29.55	43.85	51.81	58.48	67.21	.00	.00	17.74	40.75	41.52
87	9.29	22.92	35.16	42.76	50.24	59.35	.00	.00	9.29	40.95	49.76
88	3.22	8.36	20.82	27.06	37.34	47.51	.00	.00	3.22	34.12	62.66
89	41.80	43.62	46.34	54.24	60.34	68.31	.00	.00	41.80	18.54	39.66
90	1.91	5.37	12.09	20.33	30.61	43.33	.00	.00	1.91	28.69	69.39
91	7.79	12.10	20.08	31.41	37.99	51.79	.00	.00	7.79	30.20	62.01
92	97.12	97.24	97.35	97.27	97.68	97.75	.00	.00	97.12	.56	2.32
93	2.20	18.22	36.95	54.01	73.39	73.51	.00	.00	2.20	71.19	26.61
94	2.98	5.48	9.92	17.31	30.16	44.61	.00	.00	2.98	27.18	69.84
95	21.85	24.47	31.78	44.13	56.85	69.05	79.71	83.07	21.85	35.01	43.15

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
95A	51.85	53.36	58.02	66.30	73.99	77.43	87.54	92.14	51.85	22.14	26.01
96	6.45	9.62	16.46	25.01	36.13	51.76	.00	.00	6.45	29.68	63.87
97	4.31	9.90	19.71	28.15	36.25	49.25	.00	.00	4.31	31.93	63.75
98	85.11	85.95	87.81	88.98	90.31	92.04	.00	.00	85.11	5.20	9.69
99	4.25	6.98	14.50	30.38	32.20	44.60	.00	.00	4.25	27.95	67.80
100	1.85	2.19	6.04	13.95	23.11	39.39	.00	.00	1.85	21.26	76.89
101	38.56	39.79	41.97	47.45	53.12	62.29	.00	.00	38.56	14.56	46.88
102	3.11	4.20	9.11	17.47	29.01	45.01	.00	.00	3.11	25.90	70.99
103	4.11	5.85	11.58	21.41	31.85	48.01	.00	.00	4.11	27.73	68.15
104	12.09	16.29	26.56	35.07	47.39	60.88	.00	.00	12.09	35.30	52.61
105	8.71	27.49	40.44	48.90	54.92	59.81	.00	.00	8.71	46.21	45.08
106	53.31	68.97	75.16	77.88	81.11	83.60	.00	.00	53.31	27.80	18.89
107	92.43	93.26	93.76	94.34	94.62	94.99	.00	.00	92.43	2.19	5.38
108	3.75	11.57	23.31	32.31	39.96	45.41	.00	.00	3.75	36.21	60.04

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Silt	Clay	
109	84.61	87.83	89.44	90.78	91.67	92.85	.00	.00	84.61	7.06	8.33
110	40.65	45.39	52.31	57.98	63.78	71.01	.00	.00	40.65	23.13	36.22
111	6.09	11.45	22.18	32.31	41.09	53.75	.00	.00	6.09	35.00	58.91
112	5.38	10.53	22.27	30.76	40.91	53.68	.00	.00	5.38	35.53	59.09
113	7.31	13.49	25.70	35.55	44.82	54.10	.00	.00	7.31	37.52	55.18
114	79.25	81.80	83.71	85.76	87.61	89.95	.00	.00	79.25	8.37	12.39
115	94.57	94.93	95.37	95.75	96.03	96.56	.00	.00	94.57	1.46	3.97
116	2.60	7.96	20.23	30.76	39.80	52.57	.00	.00	2.60	37.20	60.20
117	95.30	96.32	96.53	96.74	97.00	97.03	.00	.00	95.30	1.71	3.00
118	5.78	14.70	26.98	36.22	44.14	55.04	.00	.00	5.78	38.36	55.86
119	26.48	35.22	44.40	50.77	57.51	65.32	.00	.00	26.48	31.03	42.49
120	5.37	13.74	26.47	35.60	43.97	56.07	.00	.00	5.37	38.60	56.03
121	3.85	11.04	25.43	36.43	44.61	56.02	.00	.00	3.85	40.76	55.39
122	79.37	86.81	88.69	90.04	91.21	92.59	.00	.00	79.37	11.84	8.79

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
123	89.60	91.20	92.14	93.31	93.50	94.67	.00	.00	89.60	3.91	6.50
124	8.32	18.00	31.28	42.64	52.02	61.64	.00	.00	8.32	43.70	47.98
125	1.70	3.62	13.69	28.24	39.14	53.14	.00	.00	1.70	37.43	60.86
126	3.52	7.17	17.46	32.40	52.17	57.17	.00	.00	3.52	48.65	47.83
127	24.27	31.08	40.54	50.49	60.11	69.46	.00	.00	24.27	35.84	39.89
128	7.03	10.66	22.58	39.44	49.92	60.67	.00	.00	7.03	42.89	50.08
129	45.94	58.57	68.31	73.51	78.05	78.41	.00	.00	45.94	32.10	21.95
130	78.58	86.84	89.29	90.52	91.39	91.97	.00	.00	78.58	12.80	8.61
131	10.97	24.08	37.57	53.67	54.32	63.72	.00	.00	10.97	43.35	45.68
132	3.02	19.14	23.04	34.26	44.55	57.26	.00	.00	3.02	41.53	55.45
132-0	2.39	14.50	17.39	24.40	31.39	39.26	.00	.00	2.39	29.00	68.61
133	76.01	79.21	82.23	84.71	86.57	89.54	.00	.00	76.01	10.56	13.43
134	62.00	66.10	71.53	75.23	79.25	83.86	.00	.00	62.00	17.25	20.75
135	5.41	15.55	30.04	40.75	50.22	61.55	.00	.00	5.41	44.81	49.78

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as:			
	62	32	16	8	4	2	1	0.5	Silt	Clay
136	1.03	4.46	17.67	30.39	41.08	79.24	.00	.00	1.03	40.05
137	.07	5.65	22.08	34.31	43.52	56.92	.00	.00	.07	42.83
137-0	.95	4.35	17.61	27.83	38.20	43.11	.00	.00	.95	37.25
138	91.07	93.26	94.14	95.18	95.44	95.74	.00	.00	91.07	4.36
139	47.08	58.75	63.79	67.82	71.39	76.24	.00	.00	47.08	24.31
140	1.50	9.35	24.45	35.41	43.69	54.95	.00	.00	1.50	42.19
141	.59	2.89	15.74	29.84	39.12	51.90	.00	.00	.59	38.54
142	2.00	9.74	23.53	35.42	45.12	58.35	.00	.00	2.00	43.13
143	1.07	5.40	28.00	30.45	33.10	57.86	.00	.00	1.07	32.02
144	1.40	7.59	22.39	35.24	43.24	55.23	.00	.00	1.40	41.84
145	5.92	19.22	30.09	40.35	48.74	59.31	.00	.00	5.92	42.82
146	2.97	12.36	28.60	40.05	48.28	58.41	.00	.00	2.97	45.31
147	1.95	10.29	24.06	36.53	44.40	55.32	.00	.00	1.95	42.45
148	2.55	11.14	24.68	39.30	49.03	59.89	.00	.00	2.55	46.48

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than (um)						Percent by weight present as: Sand      Silt      Clay
	62	32	16	8	4	2	
149	31.08	41.69	50.61	57.44	62.97	70.58	.00
150	35.36	39.98	49.53	57.22	62.98	70.30	.00
151	.78	5.44	19.92	31.73	41.42	53.29	.00
152	3.42	14.31	29.92	40.02	48.48	59.27	.00
152-0	3.54	18.75	27.41	37.55	44.85	51.67	.00
153	67.93	74.13	79.01	82.16	84.54	87.42	.00
154	3.88	10.47	18.61	31.04	40.09	51.94	.00
155	21.05	34.93	47.37	55.16	60.94	65.67	.00
156	7.73	18.01	33.72	44.15	62.35	67.87	.00
157	20.58	35.77	48.26	54.95	60.45	62.95	.00
158	94.01	94.22	95.51	95.97	95.78	95.95	.00
159	97.13	97.27	97.71	97.75	97.79	97.99	.00
160	6.44	21.62	38.57	48.04	55.34	64.93	.00
160-0	5.47	21.04	34.26	41.67	47.35	53.83	.00

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )					Percent by weight present as:					
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
161	16.98	28.26	37.58	45.36	55.30	57.98	.00	.00	16.98	38.31	44.70
162	96.89	97.08	97.33	97.44	97.65	97.71	.00	.00	96.89	.76	2.35
163	65.19	69.07	74.08	77.94	80.25	81.84	.00	.00	65.19	15.05	19.75
164	26.10	45.11	56.88	63.59	68.32	74.82	.00	.00	26.10	42.22	31.68
165	39.25	59.73	69.36	73.55	77.46	81.27	.00	.00	39.25	38.21	22.54
166	72.96	77.00	81.28	84.03	86.05	88.56	.00	.00	72.96	13.09	13.95
167	5.92	22.68	37.08	45.16	54.19	58.03	.00	.00	5.92	48.26	45.81
168	96.27	96.63	97.38	97.58	97.74	98.49	.00	.00	96.27	1.47	2.26
169	95.30	95.92	96.17	96.48	96.80	96.91	.00	.00	95.30	1.50	3.20
170	97.58	97.65	97.62	97.67	97.81	98.06	.00	.00	97.58	.22	2.19
170-0	96.09	96.42	96.52	96.66	96.89	97.04	.00	.00	96.09	.80	3.11
171	96.96	97.81	97.99	98.09	98.27	98.36	.00	.00	96.96	1.32	1.73
172	97.22	97.43	97.62	97.66	97.83	99.80	.00	.00	97.22	.61	2.17

(Continued)

Sample (See grid map)	Cumulative percent weight in size class greater than ( $\mu\text{m}$ )						Percent by weight present as:				
	62	32	16	8	4	2	1	0.5	Sand	Silt	Clay
173	37.83	47.26	55.07	62.25	68.50	74.79	.00	.00	37.83	30.67	31.50
174	1.15	22.80	40.03	50.87	58.37	68.18	.00	.00	1.15	57.22	41.63
175	70.88	80.58	84.75	87.23	89.64	91.95	.00	.00	70.88	18.76	10.36
176	97.42	97.73	97.94	97.98	98.03	98.21	.00	.00	97.42	.61	1.97

## Trace Metals in Bottom Sediments

Technique: The top 5 cm of bottom sediments were collected with an Eckman dredge. They were then vacuum filtered to remove interstitial water, oven dried at 60°C to constant weight, and sieved through a 800  $\mu$  plastic sieve. A one gram aliquot was leached in hot, concentrated nitric acid, filtered through precleaned glass fiber filter papers, and diluted to 25 ml. It was then analyzed on a Perkin-Elmer, model 303, atomic absorption spectrometer.

Principal Investigator: John M. Frazier School of Hygiene and Public Health Johns Hopkins University, Baltimore, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

## Trace Metals in Bottom Sediments

(1972 - 1973)

(ug metal/g dry wt. sediments, &lt;800um)

Location (Map 3)	N	Mn	Cu	Zn	Fe	Cd	Pb	Co	Ni	Cr
RR Km 0.0 near (South shore)	3	201 +* 92	2.51 + 0.050 -	53.4 + 19.4 -	38,000 + 21,800 -	0.35 + 0.30 -	9.07 + 5.17 -	5.11 + 2.37 -	8.92 + 6.56 -	41.0 + 10.6 -
CC Km 0.0	1	45.1	11.5	61.0	5,140	0.19	18.2	2.47	4.25	9.99
CC Km 0.4	4	67.7 + 62.7 -	13.1 + 3.7 -	48.1 + 12.6 -	7,300 + 3,800 -	0.26 + 0.09 -	34.0 + 8.8 -	2.58 + 1.63 -	4.00 + 2.31 -	9.00 + 2.55 -
CC Km 0.7	1	52.2	56.9	160	12,300	0.24	103	3.90	7.56	12.9
CC Km 0.9	1	89.6	123	232	26,300	0.70	132	6.08	24.7	30.8
BNC Km 0.5	3	80.4 + 57.1 -	7.44 + 1.11 -	43.5 + 4.7 -	9,050 + 4,030 -	0.37 + 0.08 -	11.0 + 2.9 -	3.09 + 1.32 -	5.47 + 1.36 -	18.6 + 2.0 -
SC Km 0.5	1	55.7	5.93	83.1	10,600	0.38	8.28	4.37	8.43	85.6
SC Km 1.0	1	137	22.6	150	18,100	1.29	23.9	7.74	18.8	42.8
SC Km 1.3	4	30.0 + 2.0 -	4.96 + 0.70 -	43.2 + 10.1 -	21,900 + 14,700 -	0.41 + 0.15 -	10.9 + 3.9 -	3.84 1.80	9.38 + 7.93 -	22.2 + 4.5 -

Table (continued)

Location (Map 3)	N	Mn	Cu	Zn	Fe	Cd	Pb	Co	Ni	Cr
SC Km 1.5	1	52.2	56.9	160	12,300	0.24	103	3.90	7.56	12.9
SC Km 1.7	1	89.6	123	232	26,300	0.70	132	6.08	24.7	30.8
RR Km 4.0	5	50.5 + 28.9 -	5.62 + 1.76 -	47.9 + 5.9 -	18,800 + 2,000 -	0.32 + 0.11 -	9.34 + 3.93 -	2.65 + 0.43 -	5.66 + 1.03 -	31.2 + 5.1 -
RR Km 4.4	3	46.1 + 12.6 -	5.01 + 2.17 -	61.0 + 16.0 -	26,100 + 17,900 -	0.47 + 0.23 -	9.95 + 3.99 -	4.58 + 0.89 -	8.78 + 2.74 -	41.0 + 18.1 -
RR Km 4.5	1	133	28.3	202	35,900	1.39	35.6	8.50	49.0	55.6
RR Km 4.9	1	89.9	20.1	166	17,200	1.77	27.7	9.52	23.6	63.8
RR Km 5.3	7	43.7 + 10.0 -	6.40 + 1.55 -	70.9 + 9.7 -	18,500 + 7,900 -	1.28 + 0.18 -	11.6 + 1.7 -	5.80 + 2.25 -	10.6 + 3.8 -	31.7 + 11.4 -
RR Km 5.6	1	35.3	7.52	80.8	10,500	2.58	16.1	6.51	9.54	38.3
RR Km 6.1	1	78.9	7.87	94.5	8,980	4.34	13.3	6.95	11.7	37.7
RR Km 6.5	5	120 + 33 -	6.84 + 1.21 -	95.0 + 8.8 -	24,900 + 6,400 -	3.00 + 0.43 -	10.6 + 5.3 -	7.92 + 1.35 -	13.4 + 3.9 -	34.4 + 9.6 -
RR Km 6.8 (Station 6, Map 2)	1	158	7.66	60.7	41,200	2.17	11.2	6.29	9.23	32.4

Table (continued)

Location (Map 2)	N	Mn	Cu	F <sub>H</sub>	F <sub>E</sub>	Cd	Pb	C <sub>O</sub>	N <sub>i</sub>	Cr
RR Km 6.8 (Station 5, Map 2)	1	21.8	3.12	33.7	15,100	1.31	5.78	4.33	5.39	13.1
0.3 Km above Station 5, Map 2	1**	67.0	1.55	47.2	21,200	0.74	4.63	2.11	4.80	32.3

\* + One standard deviation of the mean.

\*\* Sample was particulate <200 um.

Soils Analysis, Freshwater Stream Bank Soils, and Muddy Creek (Tidal) Bottom Sediment Analysis.

Technique: Mineral composition was determined on the residues from soil samples after oxidation of organic matter with 30% hydrogen peroxide (Pierce, J. W.; Nelson, D. D.; and Colquhoun, D. J. (1972), in Swift, Duane and Pilkey (Eds.) Shelf Sediment Transport, Dowden, Hutchinson, and Ross, Stroudsburg, Pa. p. 281-306. Mineral composition was determined by X-ray diffraction according to Jackson, M. L. (1956), Soil Chemical Analysis: Advanced Course, published by the author, Department Soil Section, University of Wisconsin, Madison, 894 p. Diffractometer scans were from 4° to 34° 2theta with Ni-filtered, Cu Kalpha radiation on glycolated and heat-treated samples (Carroll, D. (1970), Clay Minerals: A Guide to their X-ray Identification, Geol. Soc. Amer., Spec. Paper 126.

Principal Investigator: Jack W. Pierce, Department of Paleobiology, National Museum of Natural History, Smithsonian Institution.

Research Funding: Smithsonian Research Foundation and the Program for Research Applied to National Needs of the National Science Foundation.

Table: Watershed Soils Analysis Data - 1973

Sample Number	Subwater-shed	Latitude (North)	Longitude (West)	Size Class (um)	Percentage of mineral matter present as:							
					Montmorillonite	Illonite	Kaolinite	Gibbsite	Chlorite	Quartz	K-spar	Plagioclase
S1	Steinlein Branch	38°52'06"	76°34'36"	2-62	62	12	6	1	1	16	2	0
S1	Steinlein Branch	38°52'06"	76°34'36"	0-2	18	9	9	2	2	55	3	0
S3	Steinlein Branch	38°52'07"	76°34'48"	2-62	67	8	8	1	1	15	0	0
S3	Steinlein Branch	38°52'07"	76°34'48"	0-2	57	10	19	3	2	7	0	0
S10	Steinlein Branch	30°52'13"	76°34'56"	2-62	55	7	17	2	3	15	0	0
S10	Steinlein Branch	30°52'13"	76°34'56"	0-2	53	12	18	2	1	13	1	0
S20	North Branch	38°54'05"	76°34'51"	2-62	45	19	10	1	1	23	2	0
S20	North Branch	38°54'05"	76°34'51"	0-2	61	6	6	0	0	26	1	0
S25	North Branch	38°53'48"	76°34'46"	2-62	56	8	7	1	1	25	1	1
S25	North Branch	38°53'48"	76°34'46"	0-2	6	11	17	1	1	53	9	2
S30	Sellman Creek	38°54'05"	76°34'30"	2-62	55	8	8	2	2	25	0	0
S30	Sellman Creek	38°54'05"	76°34'30"	0-2	58	6	20	3	3	9	1	0

Table (Continued)

Sample Number	Subwater-shed	Latitude (North)	Longitude (West)	Size Class (um)	Percentage of mineral matter present as:						
					Montmorillonite	Illonite	Kaolinite	Gibbsite	Chlorite	Quartz	K-spar
S38	Blue Jay Branch	38°53'47" 76°35'16"	2-62	55	15	11	1	0	17	1	0
S38	Blue Jay Branch	38°53'47" 76°35'16"	0-2	69	14	7	1	0	9	0	0
S41	North Branch	38°54'28" 76°35'03"	2-62	43	14	8	2	0	32	0	0
S41	North Branch	38°54'28" 76°35'03"	0-2	59	18	6	3	0	13	1	0
S61	Main Branch	38°52'31" 76°35'22"	2-62	29	9	11	0	1	45	3	2
S61	Main Branch	38°52'31" 76°35'22"	0-2	61	10	14	1	0	12	1	0
S80	Main Branch	38°52'44" 76°34'52"	2-62	56	15	14	2	1	12	1	1
S80	Main Branch	38°52'44" 76°34'52"	0-2	63	13	9	1	0	13	1	0
S91	Mill Swamp Branch	38°53'04" 76°35'31"	2-62	21	11	10	0	0	55	1	1
S91	Mill Swamp Branch	38°53'04" 76°35'31"	0-2	59	16	13	1	0	11	1	0
S95	Sellman Creek	38°34'08" 76°34'41"	2-62	3	8	6	2	1	59	15	4
S95	Sellman Creek	38°34'08" 76°34'41"	0-2	23	11	24	1	1	30	6	4

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Table (Continued)

Sample Number	Subwater-shed	Latitude (North)	Longitude (West)	Size Class (um)	Percentage of mineral matter present as:							
					Montmorillonite	Illonite	Kaolinite	Gibbsite	Chlorite	Quartz	K-spar	Plagioclase
S96	Blue Jay Branch	38°54'38" 76°35'22"	2-62	6	5	10	1	0	0	74	3	1
S96	Blue Jay Branch	38°54'38" 76°35'22"	0-2	29	10	35	0	0	0	26	0	0
S97	Williamson Branch	38°53'30" 76°35'52"	2-62	0	7	5	1	0	0	71	11	6
S97	Williamson Branch	38°53'30" 76°35'52"	0-2	30	19	24	0	0	0	16	5	5
S98	Main Branch	38°52'23" 76°36'19"	2-62	3	14	20	5	4	48	3	3	464
S98	Main Branch	38°52'23" 76°36'19"	0-2	32	8	25	2	1	31	0	0	0
S99	Main Branch	38°51'45" 76°36'34"	2-62	4	11	9	1	2	53	16	4	
S99	Main Branch	38°51'45" 76°36'34"	0-2	47	10	20	0	0	23	0	0	
S100	Main Branch	38°52'19" 76°35'26"	2-62	32	16	20	1	1	27	2	1	
S100	Main Branch	38°52'19" 76°35'26"	0-2	63	18	5	1	1	10	1	0	

Table (Continued)

Sample Number	Subwater-shed	Latitude (North)	Longitude (West)	Size Class (um)	Percentage of mineral matter present as:						
					Montmorillonite	Illonite	Kaolinite	Gibbsite	Chlorite	Quartz	K-spar
S101	Main Branch	38°51'56"	76°36'12"	2-62	0	6	10	0	0	74	7
S101	Main Branch	38°51'56"	76°36'12"	0-2	13	14	34	4	4	32	0
S105	Main Branch	38°51'56"	76°36'12"	2-62	4	6	7	1	0	71	7
S105	Main Branch	38°51'56"	76°36'12"	0-2	-	-	-	-	-	-	-
S112	Main Branch	38°52'06"	76°35'42"	2-62	4	4	8	1	1	76	3
S112	Main Branch	38°52'06"	76°35'42"	0-2	71	5	12	0	0	9	1

Table Freshwater Stream Bank Soil Analysis Data - 1973

Sample No.	Stream	Latitude (North)	Longitude (West)	Size (um)	Class	Montmorillonite	Percentage of mineral matter present as:					
							Tto-nite	Kaoli-nite	Gibb-site	Chlo-rite	Quartz	K-spar
B3	Steinlein Branch	38°52'12"	76°35'40"	2-64	-	-	-	-	-	-	-	-
B3	Steinlein Branch	38°52'12"	76°35'40"	0-2	29	11	.8	1	1	39	2	1
B5	Steinlein Branch	38°52'20"	76°34'43"	2-64	40	10	11	2	2	32	2	0
B5	Steinlein Branch	38°52'20"	76°34'43"	0-2	31	11	11	2	2	42	2	1
B9	Steinlein Branch	38°52'16"	76°34'53"	2-64	49	7	15	1	1	26	0	1
B9	Steinlein Branch	38°52'16"	76°34'53"	0-2	71	13	4	0	0	12	0	0
B14	Unnamed	38°52'33"	76°34'38"	2-64	66	11	12	2	2	6	0	0
B14	Unnamed	38°52'33"	76°34'38"	0-2	64	13	8	2	1	13	0	0
B15	Main Branch	38°52'45"	76°34'59"	2-64	-	-	-	-	-	-	-	-
B15	Main Branch	38°52'45"	76°34'59"	0-2	60	6	17	3	2	11	0	0
B21	North Branch	38°33'48"	76°34'56"	2-64	43	5	14	0	0	35	2	0
B21	North Branch	38°33'48"	76°34'56"	0-2	46	9	22	2	2	19	0	0

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Table (Continued)

Sample No.	Stream	Latitude (North)	Longitude (West)	Size (um)	Class	Montmorillonite	Kaoli-	Percentage of mineral matter present as:				
								Illino-	Gibb-	Chlo-	K-spar	Talc
B25	North Branch	38°53'48"	76°35'00"	2-64	63	19	11	1	1	5	0	0
B25	North Branch	38°53'48"	76°35'00"	0-2	68	12	10	1	1	7	1	0
B30	Sellman Cr	38°54'09"	76°34'27"	2-64	56	15	10	1	1	17	1	0
B30	Sellman Cr	38°54'09"	76°34'27"	0-2	70	12	11	1	1	6	0	0
B31	Sellman Cr	38°34'01"	76°34'27"	2-64	61	9	7	0	0	20	2	1
B31	Sellman Cr	38°34'01"	76°34'27"	0-2	53	16	11	0	0	20	0	0
B32	Sellman Cr	38°54'00"	76°34'22"	2-64	51	14	12	1	1	21	0	0
B32	Sellman Cr	38°54'00"	76°34'22"	0-2	51	13	12	1	0	22	0	0
B33	North Branch	38°53'30"	76°34'43"	2-64	70	7	8	1	1	12	0	0
B33	North Branch	38°53'30"	76°34'43"	0-2	63	13	9	1	1	14	0	0
B61	Main Branch	38°52'44"	76°35'02"	2-64	45	10	17	2	1	23	1	0
B61	Main Branch	38°52'44"	76°35'02"	0-2	52	10	14	2	1	17	1	2
B62	Main Branch	38°52'45"	76°35'14"	2-64	44	10	17	1	0	26	0	1
B62	Main Branch	38°52'45"	76°35'14"	0-2	50	10	20	2	1	14	2	1

Table (Continued)

Sample No.	Stream	Latitude (North)	Longitude (West)	Size Class (um)	Percentage of mineral matter present as:							
					Montmorillonite	Illite	Kaolinite	Gibbsite	Quartz	K-spar	Talc	Amph
B63	Main Branch	38°52' 36"	76°35' 24"	2-64	16	6	11	1	61	3	0	0
B63	Main Branch	38°52' 36"	76°35' 24"	0-2	41	18	22	0	0	0	0	0
B64	Main Branch	38°52' 28"	76°35' 27"	2-64	37	9	10	1	38	3	1	0
B64	Main Branch	38°52' 28"	76°35' 27"	0-2	42	20	14	0	24	0	0	0
B89	Mill Swamp Branch	38°53' 03"	76°35' 27"	2-64	21	9	11	2	49	4	2	0
B89	Mill Swamp Branch	38°53' 03"	76°35' 27"	0-2	21	21	27	2	27	0	0	0
B96	Main Branch	38°51' 59"	76°36' 34"	2-64	30	5	7	0	55	0	5	0
B96	Main Branch	38°51' 59"	76°36' 34"	0-2	41	11	15	2	26	0	0	1
B98	Main Branch	38°52' 06"	76°35' 39"	2-64	6	5	6	0	72	6	5	0
B98	Main Branch	38°52' 06"	76°35' 39"	0-2	35	23	26	0	16	0	0	0

Table (Continued)

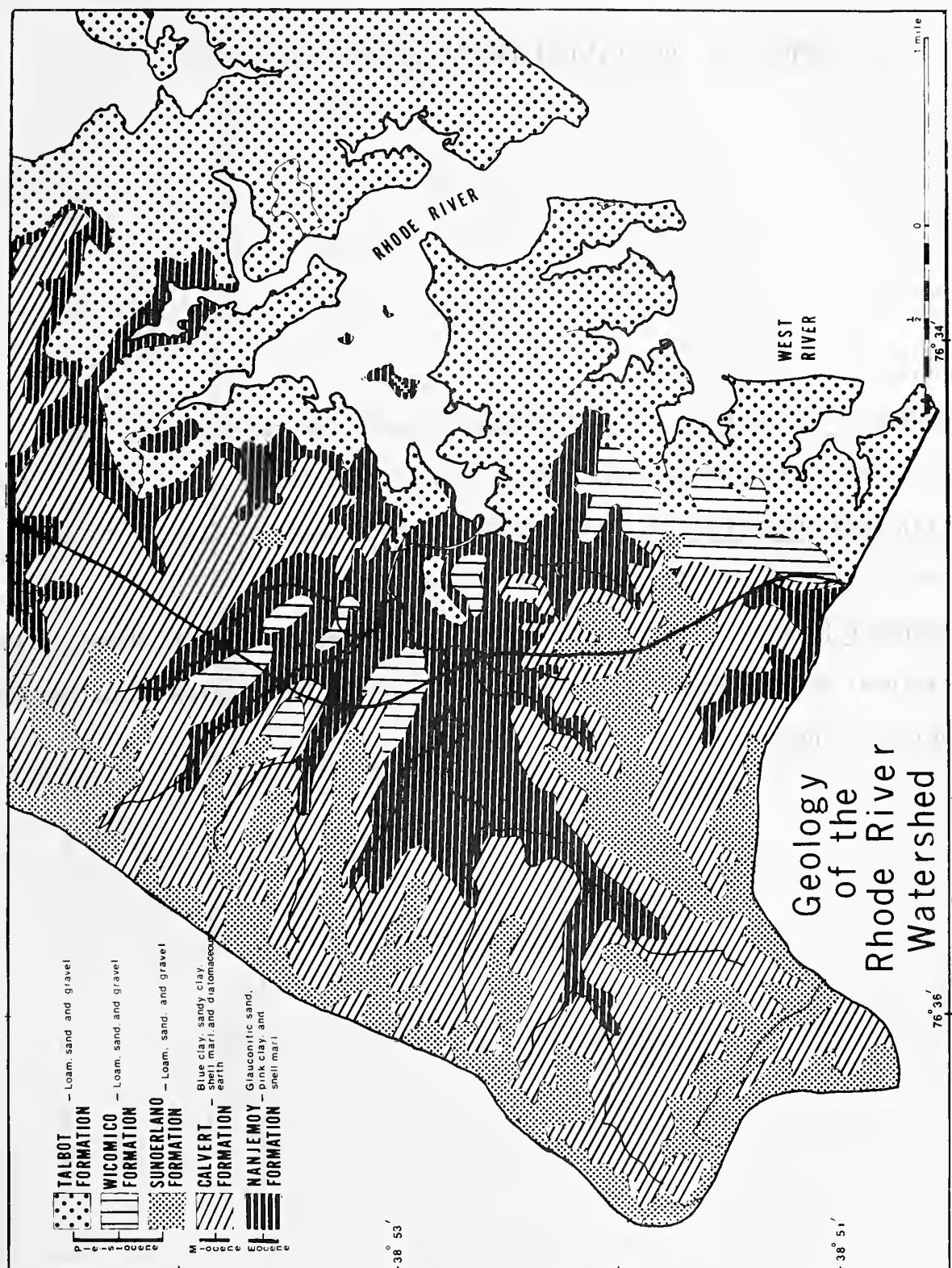
Sample No.	Stream	Latitude (North)	Longitude (West)	Size Class ( $\mu\text{m}$ )	Percentage of mineral matter present as:							
					Montmorillonite	Illite	Kaolinite	Gibbsite	Quartz	K-spar	Plagioclase	Talc
B103	Main Branch	38°51'48"	76°35'32"	2-64	23	7	8	0	1	47	5	0
B103	Main Branch	38°51'48"	76°35'32"	0-2	·	42	14	21	2	18	2	0
B105	Main Branch	38°52'10"	76°35'41"	2-64	7	11	14	0	0	56	9	4
B105	Main Branch	38°52'10"	76°35'41"	0-2	15	15	18	6	6	27	6	0
B106	Main Branch	38°52'10"	76°35'33"	2-64	13	5	9	0	0	65	5	3
B106	Main Branch	38°52'10"	76°35'33"	0-2	60	9	16	0	0	14	0	0

Geological Formations of the Rhode River Watershed

Adapted by Paul Hern from Anne Arundel County, Maryland Geological Survey,  
1916.

Principal Investigator: Jack W. Pierce, Department of Paleobiology National  
Museum of Natural History.

Research Funding: Smithsonian Research Foundation and Program for Research  
Applied to National Needs of the National Science Foundation.



Summary of Agricultural Fertilization Data - 1973

Method of Estimation: Direct personal questioning of farmers. Data does not include manure and other residuals applied.

Principal Investigator: Kevin Sullivan, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Summary of Average Fertilization of Various Agricultural Crops on Rhode River Watershed

1973

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Crop	Ares (hectares)	Fertilizer N      P	Time of Application
Corn	195	85      34	May to early June
Hay	88	21      12	May and June
Tobacco	46	97      64	April to early August
Soybeans	33	36      48	May - June
Sorghum	7	0      0	---
Truck	3	66      35	May - June
Pasture	356	53      19	March - May
Total	729	--	---

## Land use Maps of Subwatersheds of Rhode River

Technique: The 12 land use maps were constructed from aerial photographs of the subwatersheds taken in July 1957 in black and white by the U. S. Department of Agriculture, (Agricultural Stabilization and Conservation Service). The maps were then compared to aerial photos taken in June 1972 in color by the National Aeronautics and Space Administration to determine the changes in land use within each subwatershed over a period of 15 years. To make the maps, the photographs were first corrected for optical distortion with a Bausch and Lomb Zoom Transfer Scope loaned to the Smithsonian by the U. S. Navy and were then projected at a scale of 1: 12,000 upon detailed topographic maps (2 and 5 foot contour lines) prepared by the Aero Service Corporation. Tracings were then made of land use boundaries in each subwatershed on clear acetate, using heavy broken lines to delimit the subwatersheds and lighter solid or dotted lines for the numbered fields and parcels of land. The area of each land parcel was measured five times with a Keuffel and Esser, Model 620015, compensating polar planimeter and the mean value of this area was recorded in acres and, hectares.

The numbered land parcels were classified under 16 categories, including open water and marsh/swamp. Areas designated as "bare soil" were not under construction unless so noted in the tables. Those areas classified as "grass (non-residential)" include fallow but not obviously

(continued)

abandoned fields, recreation areas, barnyards, etc. Abandoned farmland is described as "old field" or "small trees" according to its principal vegetation. The designation "paved" includes paved parking and recreation areas and in some cases paved roads. Since roads are difficult to measure by planimeter their areas will be calculated more precisely later. An aggregate total of areas of building roofs will also be computed for each subwatershed. The categories "commercial" and "institutional" include only building grounds and adjacent parking lots, not large preserves or powerline rights-of-way. Data on islands in Rhode River estuary will be added as a supplement at a later time. In general the subwatersheds are presented in counterclockwise order beginning at the east side of the mouth of Rhode River (Dutchman Point) and ending at the west side of the river mouth (Cheston Point).

Principal Investigator: Daniel Higman, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Smithsonian Institution.

More information  
about land use  
and paved areas  
is needed.  
Also, information  
about abandoned  
farmland and  
race tracks.

Abandoned farmland has largely  
been converted to  
other uses.

Table Overall Summary of Land use Categories on Rhode River Watershed.

Category	1957			1972			Change		
	acres	ha	%	acres	ha	%	acres	ha	%
Small Trees	425.19	172.07	5.2	605.19	244.91	7.3	180.00	72.84	+ 2.2
Med. Sized Trees	776.49	314.24	9.4	1278.98	517.59	15.5	502.49	203.35	+ 6.1
Large Trees	2,659.93	1076.45	32.3	2238.49	905.89	27.2	421.44	170.55	- 5.1
Cultivated	2,339.55	946.79	28.4	1519.50	614.93	18.5	820.05	331.87	-10.0
Pasture	689.89	279.19	8.4	696.04	281.68	8.5	6.15	2.49	+ 0.07
Other grass (non-residential)	107.59	43.54	1.3	239.30	96.84	2.9	131.71	53.30	+ 1.6
Old Field (brushy)	526.08	212.90	6.4	527.96	213.66	6.4	1.88	0.76	+ 0.02
Residential	425.58	172.23	5.2	717.20	290.24	8.7	291.62	118.02	+ 3.5
Commercial	2.78	1.12	0.03	32.77	13.26	0.4	29.99	12.14	+ 0.4
Institutional	25.72	10.41	0.3	34.36	13.91	0.4	8.64	3.50	+ 0.1
Bare	29.00	11.74	0.4	93.72	37.93	1.1	64.72	26.19	+ 0.8
Paved	0	0	0	20.40	8.26	0.2	20.40	8.26	+ 0.2

Table (continued)

Category	1957			1972			Change acres ha %
	acres	ha	%	acres	ha	%	
Dump	0.28	0.11	0.003	5.91	2.39	0.1	5.63 2.28 + 0.1
Open Water	3.35	1.36	0.04	12.24	4.95	0.1	8.89 2.60 + 0.1
Beach	4.06	1.64	0.05	7.46	3.02	0.1	3.40 1.40 + 0.04
Fresh Marsh and Swamp	38.47	15.57	0.5	31.14	12.60	0.4	7.33 2.97 - 0.1
Salt Marsh	186.81	75.60	2.3	178.67	72.31	2.2	8.14 3.29 - 0.1
Total	8,234.69	3,332.50	100.0	8,234.69	3,332.50	100.0	- - -

Buildings in 1957: 570 (486 residential, 72 farm, 12 other).

Buildings in 1972: 1120 (967 residential, 108 farm, 45 other).

Table Summary of Land use Categories on Rhode River Shoreline Subwatershed between Cadle Creek and Dutchman's Point.

Category	/	1957		1972		Change acres ha	Notes			
		acres	ha	acres	ha					
Small Trees		0	0	1.31	.0.53	2.5	1.31	0.53	+2.5	
Med. Sized Trees		4.91	1.99	9.5	9.25	3.74	18.0	4.34	1.76	+8.4
Cultivated		6.31	2.55	12.2	0.90	0.36	1.7	5.41	2.19	-10.5
Other Grass (non-residential)		7.42	3.00	14.4	1.86	0.75	3.6	5.56	2.25	-10.8
Old Field (brushy)		8.47	3.43	16.4	1.42	0.57	2.8	7.05	2.85	-13.7
Residential (completed)		18.36	7.43	35.6	29.16	11.80	56.7	10.80	4.37	+21.0
Institutional		3.17	1.28	6.2	3.17	1.28	6.2	0	0	0
Bare		0	0	0	1.45	0.59	2.8	1.45	0.59	+2.8
Beach		2.07	0.84	4.0	2.96	1.20	5.8	0.89	0.36	+1.7
Salt Marsh		0.80	0.32	1.6	0	0	0	0.80	0.32	-1.6

Table (Continued)

Category	1957		1972		Change acres	Change %	Notes
	acres	ha	acres	ha			
Total (sum of parts)	51.52	20.85	100.0	51.47	20.83	100.0	-
Total (margin planimeter)	53.05	21.47	-	53.05	21.47	-	-
Error	-	-	3	-	3.1	-	-

Buildings in 1957: 18 (17 residential, 0 farm, 1 other).

Buildings in 1972: 54 (50 residential, 0 farm, 4 others).

Table Summary of Land use Categories on Cadle Creek Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	0	0	0	1.81	0.73	0.6	1.81	0.73	0.6	
Med. Sized Trees	95.43	38.62	31.7	69.84	28.26	23.3	25.59	10.36	- 8.5	
Cultivated	51.35	20.78	17.1	6.31	2.55	2.1	45.04	-	-15.0	
Pasture	7.12	2.88	2.4	0	0	0	7.12	2.88	- 2.4	
Other Grass (non residential)	25.21	10.20	8.4	48.28	19.54	16.1	23.07	9.34	- 7.7	
Old Field (brushy)	6.34	2.57	2.1	12.17	4.93	4.1	5.83	2.36	+ 1.9	
Residential (completed)	106.63	43.15	35.4	142.17	57.53	47.5	35.54	14.38	+11.8	
Commercial	2.32	0.90	0.7	8.75	3.54	2.9	6.43	2.60	+ 2.1	
Bare	2.07	0.84	0.7	5.58	2.26	1.9	3.51	1.42	+ 1.2	
Paved	0	0	0	1.15	0.47	0.4	1.15	0.47	+ 0.4	
Open Water	0	0	0	0.99	0.40	0.3	0.99	0.40	+ 0.3	

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Beach	0.57	0.23	0.2	0.21	0.08	0.1	0.36	0.15	- 0.1	
Salt Marsh	3.90	1.58	1.3	1.95	0.79	0.7	1.95	0.79	- 0.6	
Total (sum of parts)	300.92	121.78	100.0	299.17	121.07	100.0	-	-	-	
Total (margin planimeter)	297.59	120.43	-	297.59	120.43	-	-	-	-	
Error	-	-	1.1	-	-	0.53	-	-	-	

Building in 1957: 125 (123 residential, 0 farm, 2 others).

Building in 1972: 211 (198 residential, 0 farm, 13 others).

Table Summary of Land use Categories on Rhode River Shoreline Subwatershed between Whittemarsh and Cadle Creeks.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Med. Sized Trees	13.89	5.62	18.1	1.70	0.69	2.2	12.19	4.93	-15.8	
Cultivated	14.00	5.67	18.2	6.64	2.69	8.7	7.36	2.98	- 9.6	
Other Grass (non residential)	8.15	3.30	10.6	9.80	3.97	12.9	1.65	0.67	+ 2.1	
Old Fields (brushy)	1.61	0.65	2.1	2.36	0.96	3.1	0.75	0.30	+ 1.0	
Residential (completed)	39.26	15.89	51.0	49.77	20.14	65.6	10.51	4.25	+13.7	
Commercial	0	0	0	3.38	1.37	4.5	3.38	1.37	+ 4.4	
Paved	0	0	0	0.69	0.28	0.9	0.69	0.28	+ 0.9	
Beach	0	0	0	1.56	0.63	2.1	1.56	0.63	+ 2.0	
Total (sum of parts)	76.91	31.12	100.0	75.90	30.72	100.0	-	-	-	
Total (margin planimeter)	75.07	30.38	-	75.07	30.38	-	-	-	-	
Error	-	-	2.4	-	-	1.1	-	-	-	

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Buildings in 1957: 41 (41 residential).

Buildings in 1972: 79 (75 residential, 0 farm, 4 others).

Land use Map of:

- A. Rhode River Shoreline Subwatershed between Whitemarsh and Cadle Creeks (areas 1 through 32).
- B. Cadle Creek Subwatershed (areas 23 and 32 through 131 and parts of areas 17, 19 20 and 32.).
- C. Rhode River Shoreline Subwatershed between Cadle Creek and Dutchman's Point (areas 132 through 156 and parts of areas 127 and 128).

ADJACENT  
WHITE MARSH CK. BASIN

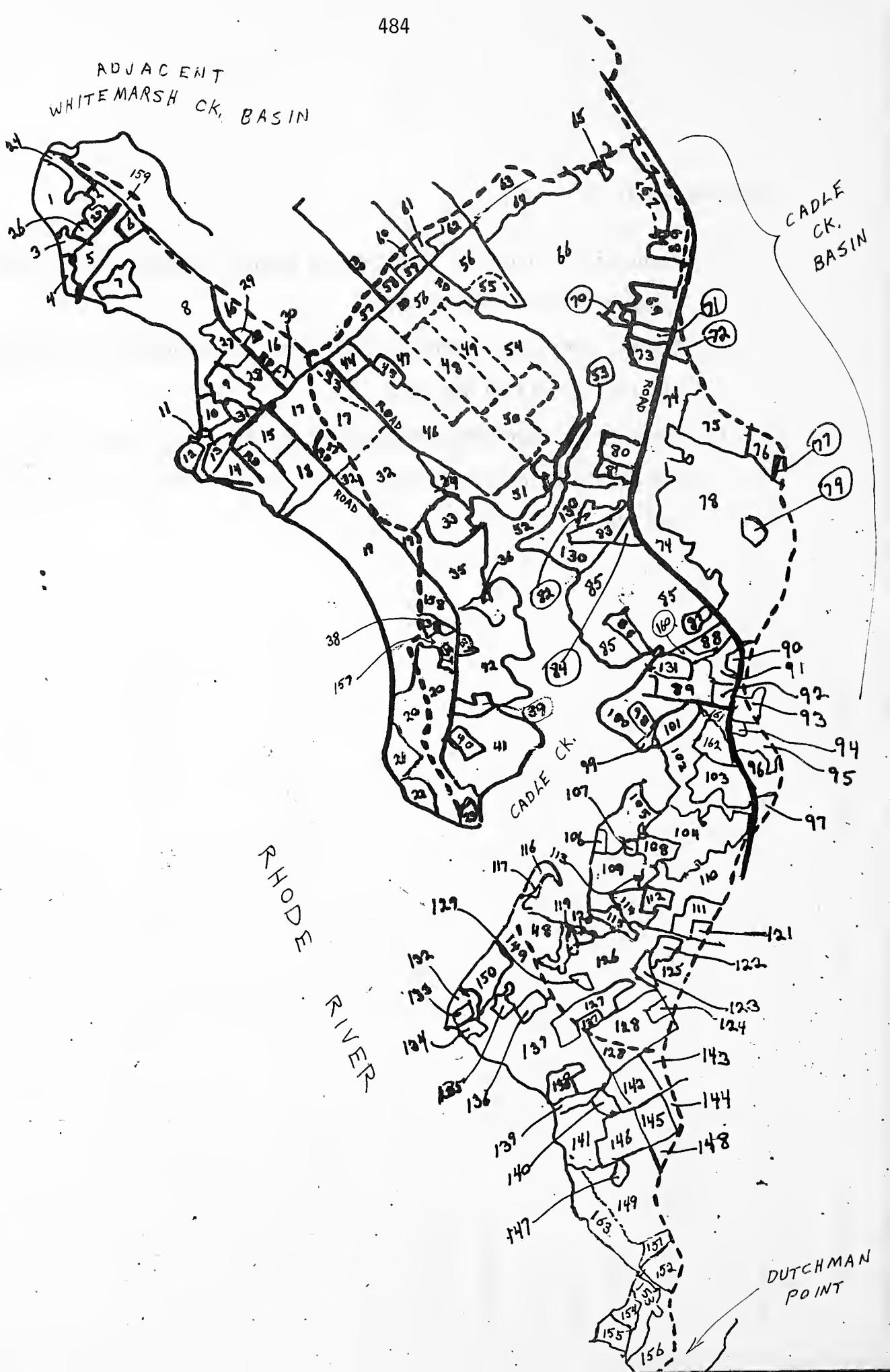


Table Details of Land use in Individual Areas on the Rhode River Shoreline between Cadle Creek and Dutchman's Point, Cadle Creek Subwatershed and Rhode River Shoreline between Cadle Creek and Whitemarsh Creek.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	3.94	1.60	med. sized trees	med. sized trees - 7/8 residential (1 bldg.) - 1/8
2	0.85	0.34	grass (non-residential)	grass (non-residential) and trees
3	0.54	0.22	residential (1 bldg.)	residential (grass)
4	0.58	0.24	old field (brush & trees)	beach
5	2.55	1.03	grass (non-residential)	grass (non-residential) - 3/8 residential (1 bldg.) - 3/8 beach - 1/8
6	0.58	0.24	residential (1 bldg.)	residential (1 bldg.)
7	1.34	0.54	med. sized trees	residential (1 bldg.) - 1/4 grass (non-residential) - 1/4 commercial (1 bldg. and beach) - 1/2
8	10.93	4.42	residential (9-10 bldg.)	residential (17 bldgs.)
9	1.93	0.78	grass (non-residential)	commercial (marina, 2 bldgs.)
10	1.12	0.45	med. sized trees	commercial (marina, 1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
11	0.81	0.33	residential (1 bldg.)	residential (1 bldg.)
12	0.67	0.27	med. sized trees	beach - 1/2 grass (non-residential) - 3/8 paved - 1/8
13	0.81	0.33	med. sized trees	med. sized trees - 2/3 grass (non-residential) - 1/3
14	3.81	1.54	residential (6 bldgs.)	residential (7 bldgs.) - 3/4
15	2.15	0.87	cultivated	cultivated
16	4.08	1.65	cultivated	grass (non-residential) - 1/2 residential (1 bldg.) - 1/2
17	7.93	3.21	cultivated	cultivated
18	2.69	1.09	cultivated	grass (non-residential) - 1/2 old field (brushy) - 1/2
19	14.78	5.98	residential (13 bldgs.)	residential (32 bldgs.)
20	8.56	3.46	med. sized trees	residential (trees, 2 bldgs.)
21	1.52	0.62	residential (1 bldg.)	residential (grass, 1 bldg.)
22	1.21	0.49	residential (1 bldg.)	residential (grass, beach, 1 bldg.)
23	0.76	0.31	old field (brushy)	old field (also beach and dirt road)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
24	1.39	0.56	residential (2-3 bldg.)	grass (non-residential) - 1/2 med. sized trees - 1/4 residential (1 bldg.) - 1/4
25	0.63	0.25	cultivated (2 gardens)	grass (non-residential)
26	0.54	0.22	residential (1 bldg.)	residential (1 bldg.)
27	1.48	0.60	med. sized trees	med. sized trees
28	1.75	0.71	residential (2 bldg.)	residential (2 bldgs.)
29	0.22	0.09	med. sized trees	med. sized trees - 2/3 grass (non-residential) - 1/3
30	0.45	0.18	residential (1 bldg.)	grass (non-residential)
31	1.21	0.49	grass (non-residential) and trees	residential (2 bldgs.)
32	8.15	3.30	pasture	old field (brushy) - 2/3 commercial (1 bldg.) - 1/3
33	2.33	0.94	commercial (bare)	commercial (1 bldg.) - 2/3 residential - 1/3
34	1.84	0.74	salt marsh	salt marsh - 1/2 med. sized trees- 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
35	5.11	2.07	residential (grass , 3 bldgs.)	residential (grass, 1 bldg.)-1/2 med. sized trees - 3/8 commercial - 3/8
36	0.94	0.38	med. sized trees	med. sized trees (vacant bldg. site)
37	1.61	0.65	med. sized trees	med. sized trees
38	0.49	0.20	med. sized trees	med. sized trees
39	0.99	0.40	med. sized trees	med. sized trees - 1/2 residential (3 bldgs.) - 1/2
40	0.90	0.36	med. sized trees	med. sized trees
41	6.85	2.77	residential	residential (10 bldgs. includ- ing boathouse)
42	7.93	3.21	residential	residential (9 bldgs.)
43	1.08	0.44	grassy (non- residential and cultivated	residential (1 bldg.)
44	1.30	0.53	grassy (non- residential) and med. sized trees	residential (1 bldg.)
45	0.94	0.38	grassy (non- residential) and 1 bldg.	residential (1 bldg.)
46	11.20	4.53	cultivated	grass (non- residential) - 7/8 residential (3 bldg.) - 1/8
47	5.11	2.07	cultivated	residential (8 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
48	4.48	1.81	cultivated	grass (non-residential)
49	3.14	1.27	cultivated	grass (non-residential)
50	4.66	1.89	cultivated	grass (non-residential)
51	2.11	0.85	residential (1 bldg.)	grass (non-residential) - 1/2 residential (3-4 bldg.) - 1/2
52	0.54	0.22	med. sized trees	med. sized trees
53	1.03	0.42	salt marsh	salt marsh
54	8.87	3.69	cultivated	grass (non-residential)
55	1.43	0.58	cultivated	residential (1 bldg.)
56	3.58	1.45	cultivated	grass (non-residential) - 5/8 residential (grass) - 3/8
57	1.88	0.76	grass (non-residential) 1 bldg.	residential (2 bldgs.) - 7/8 cultivated - 1/8
58	0.81	0.33	med. sized trees	cultivated
59	0.49	0.20	old field (brushy)	residential (1 bldg.)
60	0.54	0.22	old field (brushy)	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
61	0.72	0.29	old field (brushy)	med. sized trees
62	0.76	0.31	med. sized trees	med. sized trees - 2/3 residential (grass) - 1/3
63	1.79	0.73	med. sized trees	residential (grass)
64	3.45	1.40	residential (vacant)	residential (3 bldg.)
65	0.54	0.22	residential (vacant)	residential (1 bldg.)
66	41.21	16.68	med. sized trees (pine)	residential (4 bldg.) - 13% bare soil (recreational) - 8% grass (recreational) - 7% paved (recreational) - 1% med. sized trees - 71%
67	1.08	0.44	old field (brushy)	grass (non- residential) - 1/2 med. sized trees - 1/4 bare soil - 1/4
68	2.91	1.18	residential (grassy, 3 bldgs.)	grass (non- residential) - 1/4 commercial (5 bldg.) - 3/4
69	2.69	1.09	residential (partly cultivated, 3 bldgs.)	cultivated - 1/4 old field (brushy) - 1/4 residential (4 bldgs.) - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
70	0.18	0.07	grass (non-residential)	residential (1 bldg.)
71	0.94	0.38	cultivated	bare soil - 2/3 old field (brush & trees) - 1/3
72	0.90	0.36	cultivated	commercial (1 bldg.) - 1/2 residential (grassy) - 1/2
73	1.21	0.49	residential (grassy, 1 bldg.)	residential (3 bldgs.)
74	10.57	4.28	residential	residential (9-10 bldg.)
75	3.63	1.47.	cultivated	small trees - 1/2 grass (non-residential) - 3/10 cultivated - 1/5
76	1.43	0.58	cultivated	old field (brushy)
77	0.45	0.18	cultivated	old field (brushy)
78	21.64	8.76	med. sized trees	med. sized trees (1 bldg.)
79	0.90	0.36	residential	residential (1 bldg.)
80	1.52	0.62	residential (1 bldg.) - 1/2 cultivated - 1/2	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
81	0.90	0.36	old field (brushy)	med. sized trees - 1/2 cultivated - 1/2
82	0.94	0.38	med. sized trees	med. sized trees - 1/2 grass (non- residential) - 1/2
83	1.84	0.74	grass (non- residential)	grass (non- residential) - 7/8 commercial (1 bldg.) - 1/8
84	0.54	0.22	residential (vacant)	residential (1 bldg.)
85	14.11	5.71	residential (grass, 15 bldgs.)	residential (19 bldgs. 1 probably commercial)
86	0.90	0.36	grass (non- residential)	residential (grass, 1 bldg.)
87	0.54	0.22	md. sized trees	residential (trees, 1 bldg.)
88	1.16	0.47	cultivated	residential (grass, 2 bldgs.)
89	2.37	0.96	residential ( 2 bldg.)	residential ( grass, 4 bldg.)
90	0.81	0.33	residential ( 2 bldg.)	residential ( grass, 1 bldg)
91	1.25	0.51	grass (non- residential)	grass (non- residential)
92	0.72	0.29	residential (1 bldg.)	grass (non- residential)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
93	0.67	0.27	grass (non-residential)	residential (grass, bldg. outside watershed)
94	0.36	0.15	residential (1 bldg.)	residential (1 bldg.)
95	1.43	0.58	med. sized trees	residential (1 bldg.)
96	1.93	0.78	residential (3-4 bldg.)	residential (5-6 bldg.)
97	0.85	0.34	med. sized trees	med. sized trees
98	0.58	0.24	grass (non-residential)	grass (non-residential)
99	0.36	0.15	bare soil	grass (non-residential)
100	3.18	1.29	residential (6 bldg.)	residential (5 bldg.)
101	1.53	0.62	med. sized trees (pine)	open water - 5/8 old field (brushy) - 1/4 residential (1 bldg.) - 1/8
102	4.03	1.63	residential (7 bldg.)	residential (7 bldg., 2 parking areas)
103	3.00	1.21	med. sized trees	residential (trees, 3 bldg.)
104	5.51	2.23	med. sized trees (divided into bldg. lots)	residential (trees hide bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
105	2.78	1.12	residential (2 bldgs.)	residential (grass, 2 bldgs.)
106	0.45	0.18	med. sized trees	med. sized trees
107	0.36	0.15	med. sized trees	grass (non - residential)
108	1.03	0.42	residential (2 bldgs.)	residential (trees, 2 bldgs.)
109	3.23	1.31	residential (7 bldg. and boathouse)	residential (5 bldg and boathouse)
110	4.61	1.84	residential (12-13 bldg.)	residential (13 bldg.)
111	1.43	0.58	grass (non- residential)	residential (2 bldgs.)
112	0.76	0.31	grass (non- residential)	grass (non- residential), trees
113	1.34	0.54	med. sized trees	med. sized trees
114	1.21	0.49	residential (6 bldgs.)	residential (5 bldgs.)
115	0.63	0.25	med. sized trees	med. sized trees
116	0.85	0.34	med. sized trees	med. sized trees - 1/2 bare soil (2- bldgs.) - 1/2
117	0.09	0.04	beach	beach and (parking for boats)
118	2.33	0.94	residential (4-5 bldg.)	residential (6 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
119	1.03	0.42	med. sized trees	med. sized trees - 1/2 residential (1 bldg.) - 1/2
120	0.49	0.20	beach	residential - 3/4 beach - 1/4
121	0.45	0.18	residential (2-3 bldg.)	residential (2 bldg.)
122	0.90	0.36	grass (non- residential)	residential (1 bldg.)
123	0.58	0.24	med. sized trees	med. sized trees
124	0.49	0.20	residential (1 bldg.)	med. sized trees - 1/2 bare soil (site of runined house) - 1/2
125	2.37	0.96	residential (3 bldg.)	residential (10 bldgs.)
126	7.08	2.86	residential (15 - 16 bldgs)	residential (16 bldgs.)
127	2.42	0.98	grass (non- residential)	residential (2 bldg.)
128	4.61	1.87	grass (non- residential)	old field (brush & trees ) -3/4 residential (1 bldg.) - 1/4
129	0.22	0.09	med. sized trees	med. sized trees - 2/3 residential (1 bldg.) - 1/3
130	5.06	2.05	residential (5-6 bldgs.)	residential (5 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
131	1.03	0.42	cultivated (bare ?)	residential (2 bldgs.)
132	0.85	0.34	beach	beach (slight shore erosion)
133	0.22	0.09	residential (trees, 1 bldg.)	residential ( 2 bldg.)
134	0.72	0.29	residential (trees, 1 bldg)	residential (1 bldg.)
135	0.72	0.29	old field (brushy)	residential (4 bldg.)
136	0.76	0.31	old field (brushy)	med. sized trees - 3/4 residential (1 bldg.) - 1/4
137	9.77	3.95	residential (12 bldg.)	residential (21 bldg., new beach)
138	134	0.54	grass (non- residential)	residential (2 bldgs.)
139	0.81	0.33	salt marsh	residential (1 bldg.)
140	0.90	0.36	residential (1 bldg.)	residential (2 bldg.)
141	3.50	1.41	residential (2 bldg.)	residential (5 bldg.)
142	2.78	1.12	grass (non- residential)	grass (non- residential) - 2/3
143	0.94	0.38	old field (brushy)	small trees
144	0.63	0.25	med. sized trees	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
145	1.79	0.73	cultivated	residential (grass)
146	2.42	0.98	cultivated	residential (grass)
147	0.36	0.15	grass (non-residential)	residential (grass)
148	0.67	0.27	cultivated	residential (grass)
149	5.64	2.28	old field (brush & small trees)	med. sized trees
150	2.24	0.91	residential (trees, vacant)	residential (3 bldgs.) - 5/8 bare soil - 3/8
151	0.67	0.27	old field (brushy)	med. sized trees - 1/3 cultivated - 2/3
152	1.34	0.54	residential (grass, vacant)	residential (4 bldgs.) - 2/3 cultivated - 1/3
153	1.88	0.76	med. sized trees	med. sized trees (1 bldg.)
154	0.90	0.36	grass (non-residential)	beach (some grass) 25% larger (by deposition)
155	1.21	0.49	beach	beach 25% smaller (by erosion)
156	3.18	1.29	institutional (1 bldg.)	institutional (4 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
157	1.34	0.54	residential (2 bldgs.)	residential (2 bldgs.)
158	1.84	0.74	old field (brushy)	grass (non-residential - 2/3 med. sized trees - 1/3)
159	1.61	0.65	grass (non- residential)	grass (also trees and gardens) - 1/2 paved - 3/8
160	1.03	0.42	salt marsh	residential (1 bldg.) - 1/8 bare soil - 3/4
161	0.67	0.27	bare soil	residential (grass) - 1/4 bare soil - 5/8 residential (grass, 1 bldg.) - 3/8
162	1.57	0.63	residential (4 bldgs.)	residential (3 bldgs.)
163	3.58	1.45	med. sized trees - 2/3 grass (non- residential) - 1/3	residential (3 bldgs.) - 2/3 bare soil (bulkheaded) - 1/3

Table Summary of Land use Categories on Whitemarsh Creek Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	6.29	2.55	2.4	3.97	1.61	1.5	2.32	0.94	- 0.9	
Med. Sized Trees	48.85	19.77	18.7	42.31	17.12	16.2	6.54	2.65	- 2.5	
Large Trees	68.96	27.91	26.4	28.21	11.42	10.8	40.75	16.49	-15.6	
Cultivated	12.70	5.14	4.9	5.65	2.29	2.2	7.05	2.85	- 2.7	
Pasture	0	0	0	0	0	0	0	0	0	
Other Grass (non-residential)	3.14	1.27	1.2	27.07	10.95	10.4	23.92	9.68	+ 9.2	one recreational area accounted for 85% of increase.
Old Field (brushy)	8.91	3.60	3.4	2.04	0.83	0.8	6.86	2.78	- 2.6	
Residential (under construction)	6.91	2.80	2.6	3.21	1.30	1.2	3.70	1.50	- 1.4	
Residential (completed)	78.99	31.97	30.2	134.85	54.57	51.7	55.85	22.60	+21.4	
Commercial	0	0	0	2.39	0.97	0.9	2.39	0.97	+ 0.9	3 stores and 1 marina
Institutional	0	0	0	0	0	0	0	0	0	
Bare	17.47	7.07	6.7	0.90	0.36	0.3	16.58	6.71	- 6.4	

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Paved	0	0	0	1.01	0.41	0.4	1.01	0.41	0.4	+ 0.4
Beach	0	0	0	1.01	0.41	0.4	1.01	0.41	0.4	+ 0.4
Salt Marsh	8.91	3.60	3.4	8.22	3.33	3.2	0.69	0.28	- 0.3	
Lost by Erosion	-	-	-	0.21	0.08	0.1	0.21	0.08	+ 0.1	
Total (sum of parts)	261.13	105.68	100.0	261.04	105.64	100.0	-	-	-	
Total (margin planimeter)	264.87	107.19	-	264.88	107.19	-	-	-	-	
Error	-	-	1.4	-	-	-	1.5	-	-	

Buildings in 1957: 107 (all residential).

Buildings in 1972: 258 (258 residential, 1 farm, 4 others).

Table Summary of Land use Categories on Bear Neck Creek Subwatershed

Category	1957			1972			Change acres ha %	Notes
	acres	ha	%	acres	ha	%		
Small Trees	26.72	10.81	5.2	34.16	13.82	6.7	7.44	3.01 + 1.5
Med. Sized Trees	77.55	31.38	15.2	149.40	60.46	29.3	71.86	29.08 +14.1
Large Trees	165.79	67.09	32.5	55.76	22.57	10.9	110.03	44.64 -21.5
Cultivated	96.03	38.86	18.8	47.57	19.25	9.3	48.46	19.61 - 9.5
Pasture	24.31	9.84	4.8	14.70	5.95	2.9	9.61	3.89 - 1.9
Other Grass (non residential)	3.72	1.5.	0.7	18.69	7.56	3.7	14.97	6.06 + 2.9
							50-	
Old Field (brushy)	43.92	17.77	8.6	51.72	20.93	10.2	7.81	3.16 + 1.6
Residential	40.29	16.30	7.9	90.24	36.52	17.7	49.95	20.21 + 9.8
Commercial	0	0	0	13.66	5.53	2.7	13.66	5.53 + 2.7
Institutional	11.30	4.57	2.2	11.30	4.57	2.2	0	0 0
Bare	5.40	2.19	1.1	7.71	3.12	1.5	2.32	0.94 + 0.4 Includes a grave pit.
Dump	0	0	0	0.80	0.32	0.2	0.80	0.32 + 0.2 Dump is a filled salt marsh.



Table Summary of Land use Categories on the Watershed on the Northeast Shore of Sellman Creek Estuary.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	1.24	0.50	1.1	23.30	9.43	21.2	22.06	8.93	+20.0	
Med. Sized Trees	4.73	1.91	4.3	4.73	1.91	4.3	0	0	0	
Large Trees	69.97	28.32	63.6	67.68	27.39	61.5	2.30	0.93	- 2.1	
Other Grass (non residential)	1.47	0.59	1.3	4.84	1.96	4.4	3.37	1.36	+ 3.1	
Old Field (brushy)	24.42	9.88	22.2	0	0	0	24.43	9.87	-22.2	503
Residential (completed)	0.37	0.15	0.3	0.37	0.15	0.3	0	0	0	
Institutional	1.70	0.69	1.5	0.69	0.28	0.6	1.01	0.41	- 0.9	YMCA Camp Letts
Open Water	0	0	0	2.30	0.93	2.1	2.30	0.93	+ 2.1	
Salt Marsh	6.20	2.51	5.6	6.20	2.51	5.6	0	0	0	
Total (sum of parts)	110.10	44.56	100.0	110.10	44.56	100.0	-	-	-	
Total (margin planimeter)	109.00	44.11	-	109.00	44.11	-	-	-	-	
Error	-	-	1.0	-	-	1.0	-	-	-	

Buildings in 1957: 3 (1 residential, 1 farm, 1 other).

Buildings in 1972: 3 (2 residential, 0 farm, 1 other).

Land use Map of:

- A. White Marsh Creek Subwatershed (areas 1 through 112).
- B. Bearneck Creek Subwatershed (areas 113 through 240).
- C. Northeastern Shore Watershed of the estuarine portion of Sellman Creek. (areas 241 through 255).

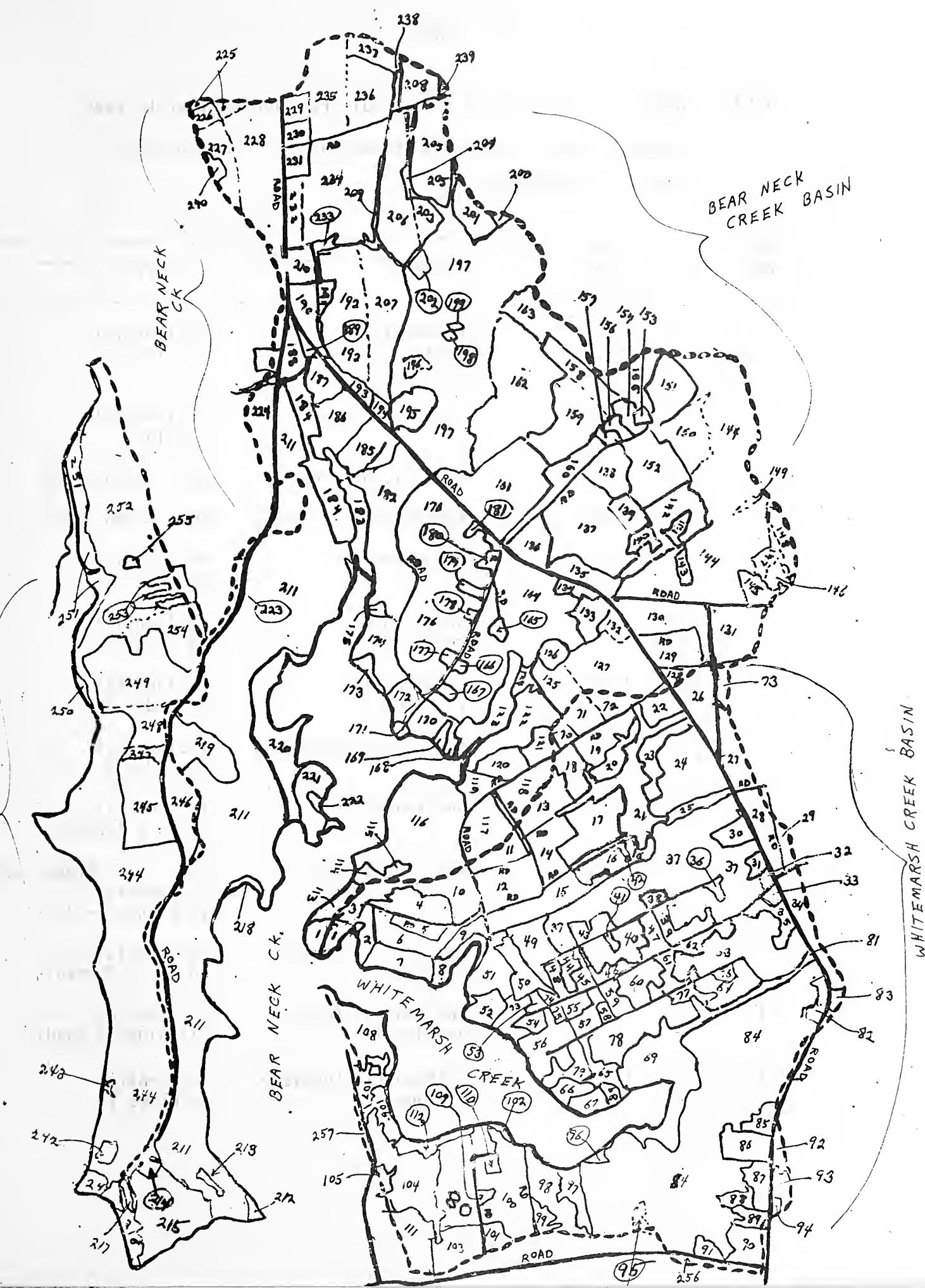


Table Details of Land use in Individual Areas on Whitemarsh Creek,  
 Bearneck Creek, and the Northeast Shore of Sellman Creek  
 Estuary Subwatersheds.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	2.15	0.87	residential (grass, trees 2 bldgs.)	residential (4 bldgs.)
2	1.45	0.59	cultivated	residential (1 bldg)
3	1.83	0.74	med. sized trees	med. sized trees
4	3.04	1.23	residential (vacant)	med. sized trees
5	1.30	0.52	cultivated	residential (grass)
6	3.46	1.40	grass (non-residential)	residential (5 bldgs.)
7	2.57	1.04	residential (5 bldgs.)	residential (3 bldgs.)
8	1.56	0.63	med. sized trees	residential (3 bldgs.)
9	1.30	0.52	cultivated	residential (road & trees)
10	3.26	1.32	med. sized trees	med. sized trees -3/4 residential (2 bldgs.) - 1/4
11	1.88	0.76	residential (grassy, 6 bldgs.)	residential (6 bldgs & road)
12	4.20	1.70	residential (grassy, 9 bldgs.)	residential (11 bldgs & road)
13	2.77	1.12	residential (grassy, 2 bldgs.)	residential (4 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
14	2.46	1.00	residential (grassy, 5 bldgs.)	residential (6 bldgs. & road)
15	4.43	1.79	residential (grassy, 9 bldgs.)	residential (7 bldgs.)
16	2.46	1.00	old field (being cleared)	residential (6 bldgs.)
17	4.52	1.83	old field (being cleared)	residential (8 bldgs.)
18	1.88	0.76	residential (grassy, 2 bldgs.)	residential (3 bldgs.)
19	2.64	1.07	residential (bare, 2 bldgs.)	residential (5 bldgs.)
20	1.83	0.74	med. sized trees	residential (4 bldgs.)
21	7.33	2.97	bare soil (roads & lots under construc- tion)	residential (11 bldgs, road)
22	1.65	0.67	bare soil (sparse grass)	residential (5 bldgs.)
23	2.46	1.00	residential (3-4 bldgs.)	residential (5 bldgs.)
24	6.53	2.64	large trees	med. sized trees - 3/4 residential (2 bldgs.) - 1/4
25	1.12	0.45	bare soil (undeveloped road cut)	paved road
26	3.58	1.45	old field (brush & trees)	grass (non- residential - 1/2 residential (4 bldgs.) - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
27	2.68	1.09	residential (grassy, 1 bldg.)	grass (non-residential) - 1/2 residential (3 bldgs.) - 1/2
28	2.75	1.11	residential (grassy, 2 bldg.)	grass (non-residential) - 1/2 residential (5 bldg.) - 1/2
29	0.89	0.36	residential (grassy, 2 bldgs.)	grass (non-residential) - 1/2 residential (2 bldgs.) - 1/2
30	1.25	0.51	old field (brushy)	residential (grassy)
31	0.67	0.27	old field (brushy)	residential (2 bldgs.) - 3/4 commercial (1 bldg.) - 1/4
32	0.45	0.18	bare soil	med. sized trees - 1/3 commercial (paved) - 2/3
33	0.40	0.16	med. sized trees	med. sized trees
34	3.40	1.38	residential (grassy, 2 bldgs.)	grass (non-residential) - 1/5 residential (8 bldgs.) - 4/5
35	1.83	0.29	residential (grassy, 2-3 bldgs.)	grass (non-residential) - 1/2 cultivated - 1/4 residential (2 bldgs.) - 1/4
36	0.58	0.24	residential (grassy)	old field (brushy)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
37	21.88	8.86	large trees	large trees - 2/5 residential (10 bldgs.) - 2/5 small trees 1/5
38	0.45	0.18	residential (grassy)	med. sized trees - 2/3 residential (1 bldg.) - 1/3
39	1.79	0.72	residential (grassy)	residential (4 bldgs.)
40	2.91	1.18	large trees	med. sized trees - 1/2 residential (3 bldgs.) - 1/2
41	0.22	0.09	residential (grassy)	residential (1 bldg.)
42	0.13	0.05	bare soil (undeveloped road cut)	residential (1 bldg.)
43	1.34	0.54	residential ( 2 bldgs.)	residential ( 2 bldgs.)
44	0.45	0.18	med. sized trees	residential (3 bldgs.)
45	0.63	0.25	residential (2 bldgs.)	residential (2 bldgs.)
46	1.03	0.42	residential (grassy)	residential (2 bldgs.)
47	1.48	0.60	residential (1-2 bldgs.)	residential (3 bldgs.)
48	0.80	0.33	residential (1 bldg.)	residential (3 bldg.)
49	3.13	1.27	old field ( brushy)	med. sized trees - 1/2 residential (2 bldg.) - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
50	2.24	0.90	med. sized trees	med. sized trees
51	3.31	1.34	residential (grass, trees 2 bldgs.)	residential (2 bldgs.)
52	1.92	0.78	med. sized trees	grass (non- residential) - 1/2 med. sized trees - 1/2
53	0.31	0.13	old field (brushy)	residential (1 bldg.)
54	0.80	0.33	residential (1 bldg.)	residential (1 bldg.)
55	0.89	0.36	med. sized trees	residential (1 bldg.)
56	3.71	1.50	med. sized trees	residential (4 bldgs.)
57	1.52	0.62	residential (2 bldg.)	residential (3 bldg.)
58	0.36	0.14	med. sized trees	med. sized trees - 7/8 residential (2 bldg.) - 1/8
59	1.21	0.49	residential (1 bldg.)	residential (3 bldgs.)
60	2.37	0.96	med. sized trees	med. sized trees - 2/3 residential - 1/3
61	1.65	0.67	residential (grassy)	residential (4 bldgs.)
62	1.21	0.49	residential (grassy)	residential (3 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
63	8.27	3.35	med. sized trees	med. sized trees - 7/8 grass (non-residential) - 1/16 residential (1 bldg.) - 1/16
64	2.59	1.05	med. sized trees	med. sized trees - 7/8 residential (1 bldg.) - 1/8
65	1.74	0.71	residential (1-2 bldg.)	residential (1 bldg.)
66	0.89	0.36	med. sized trees	residential (2 bldg.)
67	1.43	0.58	small trees	residential (1 bldg.)
68	0.45	0.18	bare soil	residential (1 bldg.)
69	8.81	3.56	salt marsh	salt marsh (mowed ?)
70	0.63	0.25	residential (under construction)	residential (1 bldg.)
71	1.97	0.80	cultivated	residential (1 bldg.)
72	1.70	0.69	cultivated	residential (1 bldg.)
73	0.89	0.36	small trees	residential (2 bldgs.) - 2/3 bare soil - 1/3
74	0.27	0.11	bare soil	residential (1 bldg.)
75	0.31	0.13	residential (2 bldgs.)	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
76	0.63	0.25	residential (brushy)	residential (1 bldg..)
77	0.89	0.36	residential (brushy)	med. sized trees - 1/2 residential (1 bldg.) - 1/2
78	5.59	2.26	med. sized trees	med. sized trees - 3/4 residential (3 bldgs.) - 1/4
79	1.83	0.74	residential (grass, trees, 1-2 bldgs.)	residential (3 bldgs.)
80	6.21	2.51	bare soil	residential (6 bldgs.)
81	2.24	0.90	bare soil (undeveloped road cut)	old field (powerline cut) - 3/4 residential (1 bldg.) - 1/4
82	1.03	0.42	residential (grass, trees 2 bldgs.)	residential (2 bldgs.)
83	0.63	0.25	med. sized trees	med. sized trees
84	44.55	18.03	large trees	old field (cleared forest) - 1/2 med, sized trees - 1/2
85	1.03	0.42	residential (grass, 2 bldgs.)	residential (2 bldgs.)
86	2.28	0.92	cultivated	cultivated (1 bldg.) - 7/8 residential (grassy) - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
87	1.83	0.74	residential (grassy, 4 bldgs.)	residential (2 bldgs.) - 2/3 commercial (1 bldg.)-1/3
88	0.85	0.34	cultivated	grass (non- residential)
89	0.94	0.38	residential (trees, 2 bldgs.)	residential (1 bldg.) - 1/2 commercial (1 bldg)-1/2
90	2.01	0.81	residential (grass, 2 bldgs.)	residential (1 bldg.)
91	0.76	0.31	residential (grass, 2 bldgs.)	residential (2 bldgs.)
92	0.80	0.33	med. sized trees	med. sized trees
93	1.03	0.42	old field (brush, small trees)	residential (under construction)
94	0.27	0.11	med. sized trees	med. sized trees
95	0.67	0.27	residential (brushy)	bare soil
96	0.54	0.22	salt marsh	med. sized trees - 1/2 bare soil or beach - 1/2
97	1.74	0.71	residential (brushy, 1 bldg.)	med. sized trees - 1/2 residential (2 bldgs.) -1/2
98	3.89	1.57	residential (trees, 4 bldgs.)	residential (trees, 4 bldgs.)
99	0.80	0.33	residential (grass, 1 bldg.)	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
100	6.75	2.73	med. sized trees	med. sized trees - 5/8 residential (under construction)-3/8
101	1.30	0.53	residential (grassy)	cultivated
102	0.45	0.18	salt marsh	salt marsh - 1/2 lost by erosion- 1/2
103	2.82	1.14	residential (grass, 2 bldgs.)	cultivated (1 bldg.)-7/8 residential (2 bldgs.) - 1/8
104	6.71	2.71	med. sized	med. sized trees -5/8 beach - 1/8 residential (4 bldgs.) - 1/4
105	0.54	0.22	residential (trees, 1-2 bldgs.)	residential (grass, 1 bldg.)
106	1.65	0.67	residential (trees, 3 bldgs.)	residential (trees, 1 bldg.)
107	1.48	0.60	med. sized trees	residential (3 bldgs.)
108	3.58	1.45	residential (grass, 5 bldgs.)	residential (7 bldgs., paved road)
109	0.18	0.07	residential (grass, 1 bldg.)	residential (1 bldg.)
110	0.40	0.16	residential (grass, trees, 1 bldg.)	residential (1 bldg.)
111	3.13	1.27	cultivated	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
112	1.61	0.65	bare soil (beach ?)	residential - 1/3 commercial (marina, 1 bldg.) - 2/3
113	1.11	0.45	med. sized trees	residential (2 bldgs.)
114	0.67	0.27	residential (bare)	residential (1 bldg.)
115	0.45	0.18	residential (grass, 2 bldgs.)	residential (2 bldgs.)
116	12.61	5.10	med. sized trees	large trees
117	3.26	1.32	residential (grass, 6 bldgs.)	residential (10 bldgs.)
118	2.95	1.19	residential (grass 6-7 bldgs.)	residential (7 bldgs.)
119	1.65	0.67	grass (non- residential)	grass (non- residential) - 1/2 bare soil - 3/8 salt marsh - 1/8
120	1.83	0.74	residential (grass & trees)	residential (1 bldg.)
121	1.48	0.60	cultivated	grass (non- residential)
122	4.65	1.88	med. sized trees	med. sized trees - 3/8 bare soil - 3/8 salt marsh - 1/8 grass (non- residential) - 1/8
123	3.96	1.60	salt marsh	salt marsh - 1/3 residential (2 bldgs.) - 1/3 lost by dredging 0 1/3

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
124	0.63	0.25	bare soil	grass (non-residential)
125	2.46	1.00	cultivated	cultivated
126	0.98	0.40	bare soil	cultivated
127	6.80	2.75	cultivated	cultivated - 3/8 grass (recreation area) - 3/8 old field (brushy) - 1/8 residential (1 bldg.) - 1/8
128	0.85	0.34	old field (brushy)	residential (2 bldgs.)
129	2.77	1.12	residential	grass (non-residential) - 3/4 bare (site of burned bldg.) - 1/4
130	5.14	2.08	small trees (brush)	med. sized trees - 1/2 grass (non-residential) - 1/4 residential (5 bldgs.) - 1/4
131	4.56	1.85	small trees (brush)	med. sized trees - 2/3 residential (2-bldgs.) - 1/3
132	1.03	0.42	residential (1 bldg.)	residential (1 bldg.)
133	1.74	0.71	residential ? (1 large bldg.)	commercial - 1/4 residential (1 bldg.) - 3/4
134	0.98	0.40	residential ? (grassy)	commercial (paved)
135	2.46	1.00	small trees	commercial (bare) - 1/3 grass (non-residential) - 1/3 bare soil (non-commercial) - 1/6 small trees - 1/6

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
136	2.46	1.00	med. sized trees	large trees
137	9.70	3.93	old field (brushy)	old field (brushy) - 3/8 small trees - 3/8 cultivated - 1/8 grass (non-residential) - 1/8
138	2.82	1.14	med. sized trees	med. sized treed
139	1.79	0.73	cultivated	old field (brushy)
140	1.12	0.45	med. sized trees	grass (recreation area)
141	0.89	0.36	med. sized trees	med. sized trees
142	4.83	1.95	old field (brushy)	grass (recreation area) - 1/2 med. sized trees - 1/2
143	0.72	0.29	old field (brushy)	med. sized trees
144	26.73	10.82	med. sized trees (pines ?)	med. sized trees - 3/4 old field (brushy) - 1/8 residential (3 bldgs.) - 1/8
145	1.43	0.58	old field (brushy)	old field
146	0.76	0.31	med. sized trees	med. sized trees
147	0.63	0.25	old field (brushy)	med. sized trees and brush

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
148	2.06	0.83	old field (brushy)	med. sized trees
149	0.45	0.18	old road ? (brushy)	med. sized trees
150	4.43	1.79	old field (brushy)	med. sized trees
151	3.80	1.54	old field (brushy)	small sized trees
152	5.54	2.24	cultivated	cultivated - 1/2 old field (brush, trees, & 1 bldg.) - 1/2
153	0.45	0.18	residential (1 bldg.)	residential (1 bldg.)
154	1.30	0.52	residential (grass)	residential ? (grass, 1 bldg.)
155	3.40	1.38	med. sized trees	med. sized trees - 7/8 pasture (1 bldg.) - 1/8
156	0.63	0.25	med. sized trees	old field (brush & trees)
157	0.76	0.31	pasture	old field (brush & trees)
158	3.58	1.45	cultivated	med. sized trees
159	6.08	2.46	pasture	med. sized trees (1 bldg.)
160	3.31	1.34	med. sized trees	med. sized trees - 2/3 cultivated - 1/3
161	9.70	3.93	cultivated	cultivated - 1/4 old field (brushy) - 3/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
162	13.23	5.36	small trees (pines ?)	small trees
163	4.02	1.63	old field (brushy)	small trees
164	17.61	7.13	large trees	residential (trees, 4 bldgs.) - 2/3 pasture - 1/8 commercial (paved) - 1/6
165	0.89	0.36	residential (bare)	residential (1 bldg.)
166	0.02	0.09	residential (bare)	residential (1 bldg.)
167	0.45	0.18	residential (bare)	residential (1 bldg.)
168	0.67	0.27	residential (grass, 1 bldg.)	residential (1 bldg.)
169	0.58	0.24	med. sized trees	residential (1 bldg.)
170	2.10	0.85	residential (grass, 2 bldgs.)	residential (2 bldgs.)
171	0.45	0.18	bare soil	bare soil (dock area)
172	1.65	0.67	residential (grass, trees, 1 bldg.)	residential (2 bldgs.)
173	0.58	0.24	salt marsh	residential (grass)
174	3.67	1.48	med. sized trees	residential (4 bldgs.)
175	0.22	0.09	residential (bare, grass 1 bldg.)	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
176	20.88	8.45	large trees	residential (trees, 15 bldgs.)
177	0.22	0.09	residential (bare, grass, 1 bldg.)	residential (1 bldg.)
178	0.13	0.05	residential (trees)	med. sized trees
179	0.40	0.16	residential (grass, 1 bldg.)	residential (1 bldg.) - 1/2 med. sized trees - 1/2
180	0.63	0.25	residential (grass)	residential (2 bldgs.)
181	0.63	0.25	residential (grass, bare)	residential (1 bldg.)
182	10.68	4.32	large trees	large trees - 1/3 residential (6 bldg.) - 2/3
183	3.26	1.32	salt marsh	salt marsh - 3/4 dump - 1/4
184	6.17	2.50	residential (grass, 9- 10 bldgs.)	residential (11 bldgs.)
185	3.49	1.41	cultivated (1 bldg.)	grass (non- residential) - 3/4 residential (3 bldgs.) - 1/4
186	4.38	1.77	med. sized trees	large trees
187	1.79	0.72	residential (trees)	residential (2 bldgs.)
188	2.06	0.83	grass (non- residential)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
189	0.89	0.36	bare soil	resisential (1 bldg.)
190	2.64	1.07	cultivated	cultivated med. sized trees - 1/4
191	0.76	0.31	med. sized trees	med. sized trees
192	8.27	3.35	cultivated	cultivated
193	1.25	0.51	large trees	med. sized trees
194	0.67	0.27	small trees	med. sized trees
195	2.46	1.00	bare (sand pit)	med. sized trees - 1/3 bare (sand pit) -2/3
196	0.67	0.27	small trees	bare (sand pit)
197	34.51	13.97	large trees	large trees - 9/10 bare (sand pit - 1/10
198	0.22	0.09	cultivated	old field (brushy)
199	0.27	0.11	cultivated	med. sized trees
200	0.11	0.05	cultivated	med. sized trees
201	2.28	0.92	cultivated	old field (brushy)
202	0.45	0.18	cultivated	old field (brushy)
203	1.43	0.58	pasture	old field (brushy, small trees)
204	0.45	0.18	med. sized trees	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
205	5.68	2.30	cultivated	old field (brush, small trees)
206	7.15	2.89	cultivated	old field (brush, small trees)
207	7.96	3.22	cultivated	cultivated
208	3.32	0.94	cultivated	cultivated
209	1.16	0.47	med. sized trees	med. sized trees
210	1.48	0.60	residential (grass, 2 bldgs.)	grass (non- residential) 1 bldg. - 1/2 residential (1 bldg.) - 1/2
211	77.61	31.41	large trees	med. sized trees
212	0.36	0.14	salt marsh	salt marsh
213	0.31	0.13	institutional (2 bldgs.)	institutional (2 bldgs.)
214	0.89	0.36	institutional (bare)	institutional (paved)
215	7.69	3.11	institutional (grass)	institutional (grass)
216	1.88	0.76	institutional (trees)	institutional (trees)
217	0.54	0.22	institutional (3 bldgs.)	institutional (3 bldgs.)
218	0.76	0.31	med. sized trees	med. sized trees
219	5.10	2.06	old field (brushy)	small trees
220	6.93	2.80	salt marsh	salt marsh

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
221	3.44	1.39	med. sized trees	med. sized trees (3/4 pines)
222	0.45	0.18	salt marsh	salt marsh
223	1.92	0.78	old field (brushy)	small trees
224	3.35	1.36	large trees	med. sized trees
225	1.03	0.42	pasture	old field (brush & trees)
226	0.80	0.33	residential ( 1 bldg.)	old field (brush , trees & 1 bldg.)
227	3.13	1.27	old field (brush)	old field (brush, trees)
228	12.25	4.96	cultivated	commercial (paved & grass) - 1/2 old field (brushy) - 3/8 med. sized trees - 1/8
229	1.25	0.51	residential (1 bldg.)	commercial (2 bldgs.)
230	0.89	0.36	old field (brushy)	grass (non- residential)
231	1.14	0.45	residential (1 bldg. under construction)	paved - 1/2 commercial (1 bldg.)- 1/2
232	2.10	0.85	cultivated (pasture ?)	residential (grass) - 1/2 cultivated - 1/2
233	0.94	0.38	med. sized trees	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
234	12.92	5.23	cultivated (pasture ?)	cultivated (1 bldg.) - 7/8 residential (2 bldgs.)-1/8
235	6.26	2.53	cultivated (pasture ?)	cultivated
236	4.87	1.97	cultivated	cultivated
237	2.06	0.83	residential ( 2 bldgs.)	cultivated - 1/3 residential (2 bldgs.) - 2/3
238	0.54	0.22	med. sized trees	med. sized trees
239	0.54	0.22	cultivated	cultivated
240	0.45	0.18	med. sized trees	med. sized trees - 3/4 grass (non- residential)-1/8 bare soil - 1/8
241	1.43	0.58	grass (non- residential)	grass (non- residential, 1 bldg.)
242	0.67	0.27	institutional (1 large bldg.)	institutional ( 1 bldg, trees)
243	0.45	0.18	salt marsh	salt marsh
244	44.53	18.02	large trees	large trees - 9/10 open water (recreation, 1 bldg.) - 1/10
245	6.30	2.55	old field (brushy)	small trees
246	4.29	1.74	old field (brushy)	small trees
247	0.98	0.40	residential (grass, 1 bldg.)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
248	2.82	1.14	old field (brushy)	small trees - 3/4 grass (non- residential) - 1/4
249	10.37	4.20	old field (brushy)	small trees - 3/4 grass (non- residential) - 1/4
250	0.58	0.24	salt marsh	salt marsh
251	5.01	2.03	salt marsh	salt marsh
252	23.61	9.55	large trees	large trees
253	1.21	0.49	small trees	small trees
254	4.60	1.86	med. sized trees (pine)	med. sized trees
255	0.36	0.14	residential (1 bldg.)	residential (2 bldgs.)
256	1.34	0.54	residential (1 bldg.) - 1/2 cultivated - 1/4 med. sized trees - 1/4	residential (3 bldgs.) - 9/10 bare soil - 1/20 grass (non- residential) - 1/20
257	0.11	0.05	residential (grass)	residential (grass)

Table Summary of Land use Categories on Camp Run Subwatershed.

Category	1957		1972		Change acres	Change %	Notes
	acres	ha	acres	ha			
Small Trees	0	0	24.52	9.92	15.6	24.52	9.92 +15.6
Med. Sized Trees	75.96	30.74	48.2	66.44	26.89	42.3	9.53 3.86 - 5.9
Cultivated	36.57	14.80	23.2	45.34	18.35	28.9	8.77 3.55 + 5.6
Pasture	36.46	14.75	23.1	14.76	5.97	9.4	21.69 8.78 -13.7
Other Grass (non residential)	3.26	1.32	2.1	0	0	0	3.26 1.32 - 2.1
Old Field (brushy)	5.33	2.16	3.4	3.60	1.46	2.3	1.72 0.70 - 1.1
Residential (completed)	0	0	0	2.43	0.98	1.6	2.43 0.98 + 1.6
Total (sum of parts)	157.58	63.77	100.0	157.09	63.57	100.0	- - -
Total (margin plani- meter)	159.65	64.61	-	159.64	64.60	-	- - -
Error	-	-	1.3	-	-	1.6	- - -

Table Summary of Land use Categories on Sellman Creek Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	2.41	0.98	1.0	27.02	10.93	11.0	24.61	9.96	+10.0	
Med. Sized Trees	60.63	24.54	24.7	60.10	24.32	24.5	0.53	0.21	- 0.2	
Large Trees	45.84	18.55	18.7	33.59	13.59	13.7	12.26	4.96	- 5.0	
Cultivated	88.41	35.78	36.0	75.55	30.57	30.8	12.86	5.20	- 5.2	
Pasture	27.14	10.98	11.0	25.39	10.28	10.3	1.74	0.70	- 0.7	
Other Grass (non residential)	2.16	0.87	0.9	6.27	2.54	2.6	4.11	1.66	+ 1.7	
Old Field (brushy)	14.67	5.94	6.0	4.02	1.63	1.6	10.65	4.31	- 4.3	
Residential (completed)	3.26	1.32	1.3	9.94	4.02	4.0	6.68	2.70	+ 2.7	
Paved	0	0	0	2.64	1.07	1.1	2.64	1.70	+ 1.1	
Fresh Marsh	1.12	0.45	0.5	1.12	0.45	0.5	0	0	0	

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Total (sum of parts)	245.64	99.41	100.0	245.64	99.41	100.0	-	-	-	-
Total (margin planimeter)	242.70	98.22	-	242.70	98.22	-	-	-	-	-
Error	-	-	1.2	-	-	1.2	-	-	-	-

Buildings in 1957: 2 (residential)

Buildings in 1972: 20 (10 residential, 10 farm)

Land use Map of:

- A. Camp Run Subwatershed. (areas A through P).
- B. Sellman Creek Subwatershed. (areas 1 through 42).

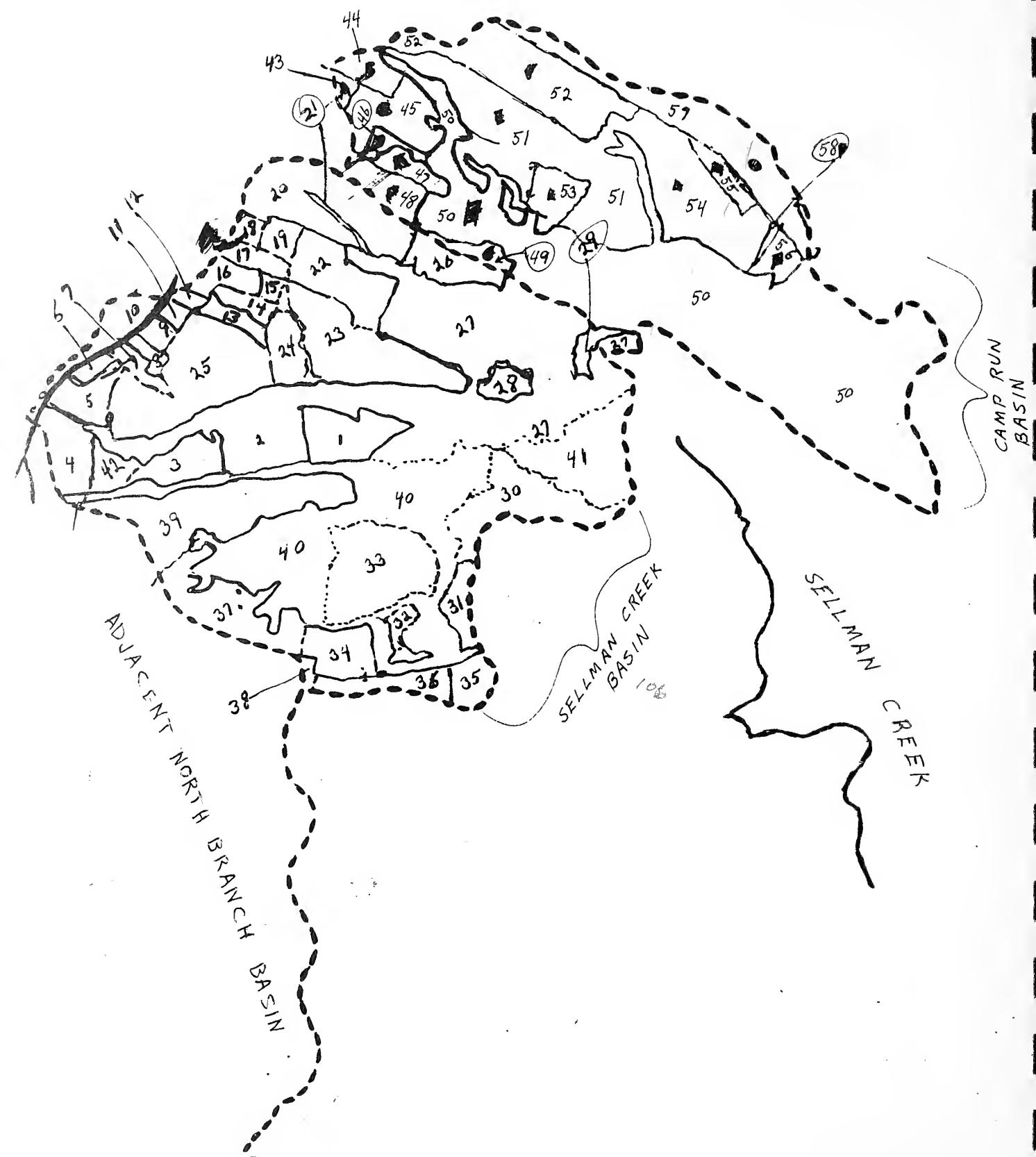


Table Details of Land use in Individual Areas on Camp Run and Sellman Creek Subwatersheds.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	5.28	2.14	cultivated	cultivated
2	11.57	4.68	med. sized trees	med. sized trees
3	3.85	1.56	cultivated	cultivated
4	4.34	1.76	cultivated	pasture - 5/8 paved - 1/8 grass (non-residential) - 1/4
5	3.58	1.45	cultivated	cultivated - 5/8 paved - 1/8 residential - 1/4
6	1.07	0.43	cultivated	cultivated - 1/2 residential (grassy) - 1/2
7	1.79	0.72	cultivated	residential (grassy)
8	1.03	0.42	residential (1 bldg.)	residential (2 bldg.)
9	1.21	0.49	cultivated	residential (1 bldg.)
10	3.85	1.56	pasture	cultivated
11	0.76	0.31	residential (1 bldg.)	residential (1 bldg.)
12	0.85	0.34	residential (1 bldg.)	residential (1 bldg.)
13	1.66	0.67	med. sized trees	med. sized trees
14	1.83	0.74	cultivated	cultivated
15	0.67	0.27	cultivated	cultivated
16	2.24	0.91	cultivated	cultivated
17	1.79	0.72	cultivated	cultivated (1 bldg.)
18	1.03	0.42	cultivated	cultivated - 1/2 residential (3 bldg.) - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
19	1.61	0.65	pasture	grass (non-residential) 6 (bldg.)
20	11.14	4.51	cultivated	cultivated - 2/3 pasture (1 bldg.) - 1/3
21	0.90	0.36	old field (brushy)	med. sized trees
22	6.67	2.70	pasture	cultivated (2 bldg.)
23	10.83	4.38	cultivated	cultivated
24	3.13	1.27	cultivated	cultivated
25	13.92	5.63	cultivated	cultivated - 7/8 residential- (2 bldg)-1/8
26	3.45	1.39	cultivated	cultivated
27	38.64	15.64	med. sized trees (thin canopy)	med. sized trees (dense canopy) - 9/10 grass (non-residential)-1/10
28	2.15	0.87	grass (non-residential)	med. sized trees -1/3 grass (non-residential)-2/3
29	1.12	0.45	freshwater marsh and swamp	freshwater marsh and swamp
30	8.82	3.57	med. sized trees (pines)	small (med. sized pines)
31	2.42	0.98	small trees	small trees
32	1.57	0.63	old field (brushy)	small trees
33	10.29	4.17	old field (brushy)	small trees (med. sized pines)
34	4.03	1.63	cultivated	old field (brushy)
35	2.64	1.07	pasture	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
36	4.21	1.70	pasture	pasture
37	8.19	3.31	pasture	pasture
38	0.63	0.25	residential (garden)	residential
39	13.29	5.38	cultivated	pasture - 7/8 paved - 1/8
40	36.47	14.76	large trees	large trees - 3/4 small trees - 1/4
41	9.40	3.80	large trees	large trees - 2/3 small trees - 1/3
42	1.92	0.78	old field (brushy)	cultivated - 1/2 small trees - 1/4 pasture - 1/4
43	0.76	0.31	old field (brushy)	cultivated
44	2.10	0.85	cultivated	cultivated
45	3.98	1.61	cultivated	cultivated
46	0.90	0.36	old field (brushy)	old field (brushy)
47	1.88	0.76	old field (brushy)	cultivated
48	3.27	1.32	cultivated	cultivated
49	1.43	0.58	cultivated	cultivated
50	75.52	30.56	med. sized trees	med. sized trees - 7/8 small trees, roads, and residential (1 bldg.) - 1/8
51	21.70	8.78	pasture	cultivated - 3/4 old field - 1/8 small trees - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	1957	Land use in:	
				1957	1972
52	12.80	5.18	cultivated	cultivated	
53	3.27	1.32	cultivated	*cultivated - 7/8 *med. sized trees - 1/8	
54	12.98	5.25	cultivated	*pasture	
55	1.79	0.72	cultivated	*pasture	
56	1.79	0.72	old field (brushy)	residential (1 bldg.)	
57	13.02	5.27	cultivated	small trees - 9/10 residential - 1/10	
58	0.49	0.20	med. sized trees	small trees	

\* Recently abandoned.

Table Summary of Land use Categories on Pasture Run Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	2.32	0.94	1.2	19.72	7.98	9.7	17.41	7.05	+ 8.6	
Med. Sized Trees	23.76	9.62	11.7	34.18	13.83	16.9	10.42	4.22	+ 5.2	
Large Trees	101.97	41.27	50.4	72.57	29.37	35.8	29.41	11.90	-14.5	
Cultivated	3.74	1.51	1.8	3.74	1.51	1.8	0	0	0	
Pasture	54.89	22.21	27.1	56.59	22.90	28.0	1.70	0.69	+ 0.8	
Other Grass (non residential)	1.61	0.65	0.8	4.61	1.87	2.3	3.01	1.22	+ 1.5	Increase was mostly barnyard
Old Field (brushy)	3.12	1.26	1.5	0	0	0	3.12	1.26	- 1.5	
Residential (completed)	1.08	0.44	0.5	1.08	0.44	0.5	0	0	0	
Fresh Marsh	2.27	0.92	1.1	1.38	0.56	0.7	0.90	0.36	- 0.4	
Salt Marsh	7.64	3.09	3.8	7.64	3.09	3.8	0	0	0	
Swamp	0	0	0	0.90	0.36	0.4	0.90	0.36	+ 0.4	Fresh marsh grown up in trees.

Table (continued)

Category	1957			1972			Change acres ha	Notes
	acres	ha	%	acres	ha	%		
Total (sum of parts)	202.41	81.91	100.0	202.41	81.91	100.0	-	-
Total (margin planimeter)	201.06	81.37	-	201.06	81.37	-	-	-
Error	-	-	0.7	-	-	0.7	-	-

Buildings in 1957: 8 (2 residential, 6 farm).

Buildings in 1972: 11 (1 residential, 10 farm).

Table Summary of Land use Categories on Sheepshead Cove Subwatershed.

Category	1957			1972			Change acres ha %	Notes
	acres	ha	%	acres	ha	%		
Small Trees	0	0	0	3.97	1.61	2.2	3.97	1.61 + 2.2
Med. Sized Trees	25.56	10.34	14.9	40.96	16.58	22.9	15.39	6.23 + 8.1
Large Trees	46.24	18.71	25.9	29.98	12.13	16.8	16.25	6.58 - 9.1
Cultivated	49.70	20.11	27.8	50.50	20.44	28.3	0.80	0.32 + 0.5
Pasture	20.25	8.19	11.3	26.15	10.58	14.6	5.90	2.39 + 3.3
Other Grass (non residential)	0	0	0	0.21	0.08	0.1	0.21	0.08 + 0.1
Old Field (brushy)	26.79	10.84	15.0	16.64	6.73	9.3	10.15	4.11 - 5.7
Residential (completed)	2.36	0.96	1.3	2.92	1.18	1.6	0.55	0.22 + 0.3
Institutional	0	0	0	0.90	0.36	0.5	0.90	0.36 + 0.5
Fresh Marsh	0.80	0.32	0.4	0	0	0	0.80	0.32 - 0.4
Salt Marsh	6.06	2.45	3.4	6.11	2.47	3.4	0.05	0.02 + 0.0
Lost by Erosion	0	0	0	0.39	0.	0.2	0.39	0.16 + 0.2

Table (Continued)

Category	1957		1972		Change		Notes	
	acres	ha	acres	ha	%	acres	ha	
Total (sum of parts)	177.76	71.94	100.0	178.72	72.33	100.0	-	-
Total (margin planimeter)	179.91	72.81	-	180.92	73.22	-	-	-
Error	-	-	1.2	-	-	1.2	-	-

Buildings in 1957: 3 (residential) 0 farm

Buildings in 1972: 10 (7 residential, 3 others).

Table Summary of Land use Categories on Fox Creek Subwatershed.

Category	1957		1972		Change		Notes	
	acres	ha	acres	ha	%	ha		
Small Trees	0	0	0	27.16	10.99	34.4	27.16	10.99 +34.4 2.38 ha below weir
Med. Sized Trees	10.47	4.24	13.3	24.84	10.05	31.4	14.37	5.82 +18.2 1.87 ha below weir
Cultivated	6.11	2.47	7.7	5.81	2.35	7.4	0.30	0.12 - 0.4
Pasture	3.42	0.56	4.3	5.46	2.21	6.9	2.04	0.83 + 2.6
Old Field (brushy)	55.33	22.39	70.1	12.97	5.25	16.4	42.36	17.14 -53.6
Residential (completed)	0.62	0.25	0.8	0.62	0.25	0.8	0	0 Abandoned house
Institutional	0.44	0.18	0.6	0.44	0.18	0.6	0	0 CBCES Bldgs.
Fresh Marsh	1.10	0.45	1.4	0.92	0.37	1.2	0.18	0.07 - 0.2 0.35 ha below weir
Salt Marsh	1.49	0.60	1.9	0.74	0.30	0.9	0.76	0.31 - 1.0 0.31 ha below weir
Total (sum of parts)	78.79	31.89	100.0	78.95	31.95	100.0	-	- sum 4.91 ha below weir
Total (margin planimeter)	80.44	32.55	-	80.58	32.61	-	-	-
Error	-	-	2.1	-	-	2.1	-	-

Table Summary of Land use Categories on South Java Farm (North Side of Tidal Muddy Creek).

Category	1957			1972			Change acres ha	Notes
	acres	ha	%	acres	ha	%		
Small Trees	16.05	6.50	15.0	35.97	14.56	33.7	19.93	8.07 +18.6
Med. Sized Trees	0.48	0.19	0.4	5.07	2.05	4.8	4.59	1.86 + 4.3
Large Trees	37.49	15.17	35.1	37.49	15.17	35.1	0	0
Old Field (brushy)	33.42	13.52	31.3	8.93	3.61	8.4	24.50	9.91 -23.0
Salt Marsh	19.33	7.82	18.1	19.33	7.82	18.1	0	0
Total (sum of parts)	106.77	43.21	100.0	106.79	43.22	100.0	-	-
Total (margin plani- meter)	108.77	44.02	-	108.77	44.02	-	-	-
Error	-	-	1.9	-	-	1.8	-	-

No buildings in 1957 or 1972.

Table Summary of Land use Categories on Fox Cove Subwatershed.

Category	acres			ha			acres			ha			Notes
			%			%			%				
Small Trees	0	0	0	11.02	4.46	35.5	11.02	4.46	+35.5				
Large Trees	15.75	6.37	50.8	15.75	6.37	50.7	0	0	0				
Old Field (brushy)	11.34	4.59	36.6	0.34	0.14	1.1	11.00	4.45	35.5				
Salt Marsh	3.93	1.59	12.7	3.93	1.59	12.7	0	0	0				
Total (sum of parts)	31.02	12.55	100.0	31.04	12.56	100.0	-	-	-				
Total (margin plan- meter)	30.49	12.34	-	30.49	12.34	-	-	-	-				
Error	-	-	1.7	-	-	1.8	-	-	-				

Land use Map of:

- A. Pasture Run Subwatershed (areas 1 through 25).
- B. Sheepshead Cove Subwatershed. (areas 26 through 48 plus parts of areas 10, 11, 14, 23, 25).
- C. Fox Creek Subwatershed (areas 49 through 70 and plus parts of areas 46 and 47).
- D. South Java Farm Subwatershed. (areas 71 through 79 plus part of area 80).
- E. Fox Cove Subwatershed. (areas 81, 87, 88 and parts of areas 53 and 80).

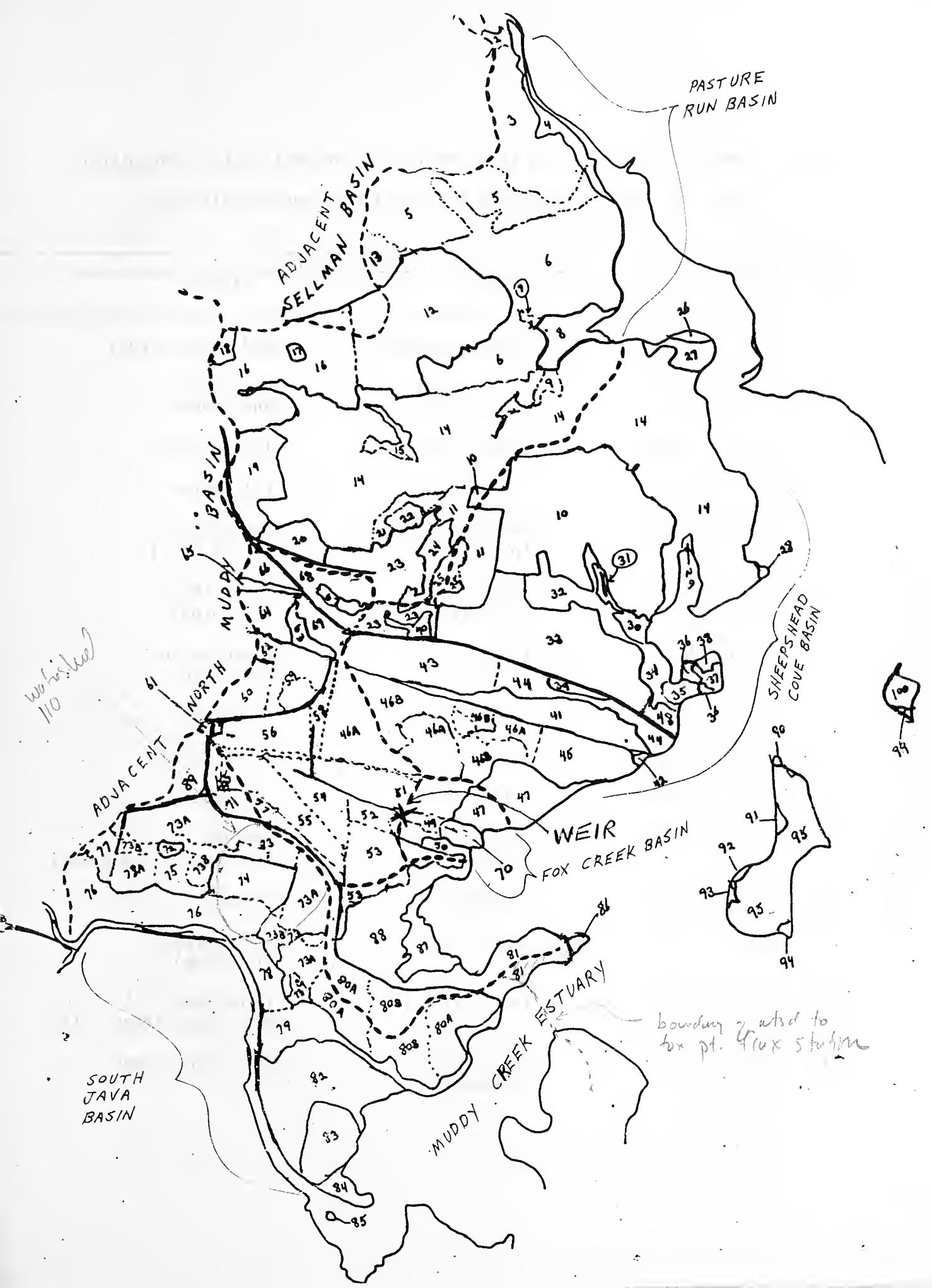


Table Details of Land use in Individual Areas on Pasture Run, Sheepshead Cove, Fox Creek, South Java Farm, and Fox Cove Subwatersheds.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	1.87	0.76	med. sized trees	med. sized trees
2	0.58	0.23	fresh marsh	fresh marsh and swamp
3	12.56	5.08	large trees	large trees
4	3.47	1.41	salt marsh	salt marsh
5	17.41	7.05	med. sized trees (pine)	small trees ( $\pm$ 40% pine)
6	33.00	13.35	large trees (1/2 pine)	large trees (1/2 pine)
7	0.31	0.13	fresh marsh	fresh marsh and swamp
8	4.19	1.69	salt marsh	salt marsh
9	1.38	0.56	fresh marsh	fresh marsh
10	34.07	13.79	cultivated	cultivated
11	6.72	2.72	large trees (scattered)	pasture (3/4 trees, 1/4 grass)
12	22.36	9.05	pasture	pasture
13	2.32	0.94	small trees	small trees (1/3 pine)
14	95.03	38.46	large trees	large trees - 1/2 med. sized trees - 1/2
15	1.60	0.65	grass (non-residential)	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
16	17.41	7.05	pasture	pasture
17	0.40	0.16	med. sized trees	med. sized trees
18	1.07	0.43	residential (2 bldgs.)	residential (trees, garden, 1 bldg.)
19	7.53	3.05	pasture	pasture
20	3.25	1.32	cultivated	cultivated
21	2.00	0.81	old field (brushy)	med. sized trees - 3/4 grass (non- residential, barnyard, 1 bldg.)
22	1.16	0.47	med. sized trees	pasture - 3/4 med. sized trees - 1/4
23	8.24	3.33	pasture (5-6 farm bldg.)	pasture - 1/2 grass (non- residential, 8-9 farm bldgs.) - 1/2
24	2.94	1.19	med. sized trees	pasture - 1/2 med. sized trees - 1/2
25	2.18	0.88	old field (brushy)	pasture (1 bldg.)
26	0.49	0.20	med. sized trees	small trees
27	2.45	0.99	salt marsh	salt marsh
28	0.22	0.09	salt marsh	salt marsh
29	0.31	0.13	salt marsh	salt marsh
30	1.25	0.50	salt marsh	salt marsh
31	0.80	0.32	fresh marsh	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
32	5.61	2.27	med. sized trees	med. sized trees
33	19.68	7.97	pasture	pasture
34	2.23	0.90	med. sized trees	med. sized trees - 3/4 residential (2 bldgs.) - 1/4
35	1.25	0.50	salt marsh	salt marsh
36	1.78	0.72	med. sized trees	med. sized trees - 7/8 lost by erosion - 1/8
37	1.16	0.47	residential (1 bldg.)	residential (1 bldg.)
38	0.45	0.18	med. sized trees	grass (non- residential) and trees - 1/2 salt marsh - 1/8 lost by erosion - 3/8
39	1.02	0.41	med. sized trees	large trees
40	0.94	0.38	med. sized trees	med. sized trees - 1/2 pasture - 1/2
41	8.55	3.46	med. sized trees	large trees
42	0.58	0.23	salt marsh	salt marsh
43	10.69	4.33	cultivated	cultivated
44	5.48	2.22	cultivated	cultivated
45	6.99	2.83	old field (brushy)	small trees - 1/2 old field (brushy) - 3/8 institutional (3 bldgs.) - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
46A	18.75	7.59	old field (scattered brush)	old field (dense brush) - 3/4
46B	8.28	3.35	old field (dense brush)	med. sized trees - 1/4
**47	9.40	3.80	med. sized trees	med. sized trees
48	1.20	0.49	residential (2-3 bldg.)	residential (4 bldg.)
**49	0.98	0.40	fresh marsh	fresh marsh - 1/2 med. sized trees - 1/2
**50	0.89	0.36	med. sized trees	med. sized trees
51	8.64	3.50	old field (dense brush)	old field (brush) - 1/8 small trees - 7/8
52	2.85	1.16	old field (dense brush)	small trees
53	8.77	3.55	old field (dense brush)	old field (brush) - 1/8 small trees - 7/8
54	4.99	2.02	old field (dense brush)	old field (brush) - 3/8 small trees - 5/8
55	7.35	2.97	old field (brushy)	small trees
56	6.28	2.54	old field (brushy)	med. sized trees
57	2.05	0.83	old field (brushy)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
58	1.91	0.77	old field (brushy, ditch)	med. sized trees
59	5.17	2.09	old field (brush partly dense)	med. sized trees
60	3.70	1.50	old field (dense brush)	old field (brush) - 1/2 med. sized trees - 1/2
61	0.45	0.18	residential (1 bldg.)	institutional (grass, small pond)
62	0.62	0.25	residential (trees, 1 bldg.)	institutional (large trees, old bldg.)
63	1.60	0.65	med. sized trees	med. sized trees - 7/8 cultivated - 1/8
64	3.25	1.32	cultivated	cultivated
65	0.71	0.29	med. sized trees	med. sized trees
66	2.05	0.83	cultivated	pasture
67	0.80	0.32	cultivated	med. sized trees
68	3.43	1.39	pasture	pasture
69	2.36	0.96	med. sized trees	cultivated
70	1.51	0.61	salt marsh	salt marsh - 1/2 fresh marsh - 1/4 med. sized trees - 1/4
71	0.49	0.20	med. sized trees	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
73A	11.47	4.64	old field	
73B	11.47	4.64	old field (small trees)	{ old field (brushy - 1/4 small trees - 3/4
74	5.34	2.16	large trees	large trees
75	2.63	1.06	small trees	med. sized trees
76	13.27	5.37	large trees (salt marsh indistinct)	large trees - 7/8 salt marsh - 1/8
77	1.96	0.79	small trees	med. sized trees
78	3.56	1.44	large trees	large trees
79	8.33	3.37	large trees	large trees
80A	7.75	3.14	old field (weeds & scattered brush)	small trees
80B	14.07	5.69	old field (small trees)	small trees
81	8.46	3.42	large trees	large trees
82	15.36	6.22	salt marsh	salt marsh
83	6.01	2.43	large trees	large trees
84	1.78	0.72	salt marsh	salt marsh
85	-	-	not yet computed	(island)
86	0.22	0.09	salt marsh	salt marsh
87	3.92	1.59	salt marsh	salt marsh

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
88	10.29	4.16	large trees	large trees
89	4.10	1.66	old field (brushy)	old field (brushy) - 1/2 med. sized trees - 1/4 institutional (3 bldgs.) - 1/4

\*\* Numbers 47 - 30.33%, 51 - 37.63%, 52 - 42.19% , 53 - 16.24% are below the weir.

\*\* Numbers 49, 50, and 70 are entirely below the weir.

Table Summary of Land use Categories on North Branch of Muddy Creek Subwatershed above Weir.

Category	1957			1972			Change		Notes
	acres	ha	%	acres	ha	%	acres	ha	
Small Trees	30.12	12.19	5.3	45.57	18.44	7.7	15.45	6.25	+ 2.7
Med. Sized Trees	34.25	13.86	6.0	44.19	17.88	7.5	9.94	4.02	+ 1.7
Large Trees	130.05	52.63	22.7	140.59	56.90	23.8	10.54	4.27	+ 1.8
Cultivated	196.14	79.38	34.2	172.27	69.72	29.1	23.87	9.66	- 4.2
Pasture	126.96	52.59	22.7	106.22	42.99	18.0	23.74	9.61	- 4.1
Other Grass (non residential)	13.34	5.40	2.3	9.73	3.94	1.6	3.61	1.46	- 0.6
Old Field (brushy)	13.91	5.63	2.4	35.72	14.46	6.0	21.81	8.83	+ 3.8
Residential (completed)	18.82	7.62	3.3	24.56	9.94	4.2	5.74	2.32	+ 1.0
Institutional	1.42	0.57	0.2	1.42	0.57	0.2	0	0	0
Bare	0	0	0	2.32	0.94	0.4	2.32	0.94	+ 0.4
Paved	0	0	0	2.18	0.88	0.4	2.18	0.88	+ 0.4
Dump	0	0	0	2.02	0.82	0.3	2.02	0.82	+ 0.4

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Open Water	1.03	0.42	0.2	2.30	0.93	0.4	1.27	0.51	+ 0.2	
Fresh Marsh	3.88	1.57	0.7	2.41	0.98	0.4	1.47	0.59	- 0.3	
Total (sum of parts)	572.93	231.86	100.0	591.48	239.37	100.0	-	-	-	
Total (margin planimeter)	586.16	237.21	-	586.16	237.21	-	-	-	-	
Error	-	-	2.3	-	-	0.9	-	-	-	
										552

Buildings in 1957: 22 (14 residential, 8 farms).

Buildings in 1972: 42 (28 residential, 10 farms, 4 others).

Table Summary of Land use Categories on North Branch of Muddy Creek below Weir.

Category	1957			1972			Change		Notes
	acres	ha	%	acres	ha	%	acres	ha	
Small Trees	6.36	2.57	8.3	11.04	4.47	14.4	4.68	1.89	+ 6.1
Med. Sized Trees	0	0	0	10.40	4.21	13.5	10.40	4.21	+13.5
Large Trees	53.56	21.68	69.6	47.59	19.26	61.9	5.97	2.42	- 7.8
Old Field (brushy)	14.10	5.71	18.3	4.82	1.95	6.3	9.28	3.76	-12.1
Salt Marsh	2.98	1.21	3.9	2.98	1.21	3.9	0	0	0
Total (sum of parts)	77.00	31.16	100.0	76.84	31.10	100.0	-	-	-
Total (margin plani- meter)	76.31	30.88	-	76.31	30.88	-	-	-	-
Error	-	-	0.9	-	-	0.7	-	-	-

No buildings in 1957 or in 1972.

Land use Map of North Branch of Muddy Creek Subwatershed.

Maps switched N.Br is page 567

Blue Jay Br. 102

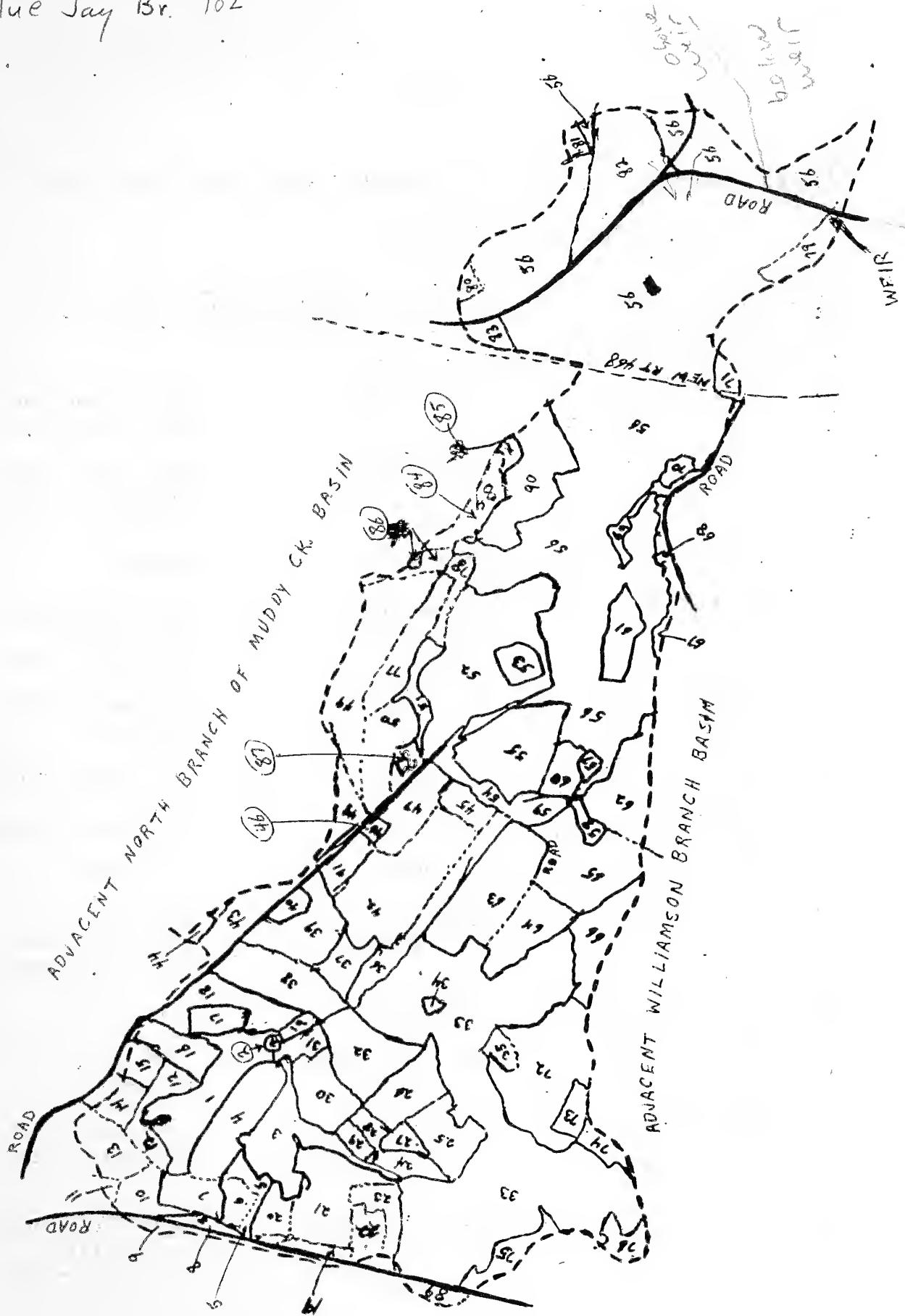


Table Details of Land use in Individual Areas on the North Branch  
of Muddy Creek Subwatershed

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	5.34	2.16	large trees	med. sized trees - 1/3 small trees - 2/3
2	2.91	1.78	residential (grass)	med. sized trees - 1/4 pasture (1 bldg.) - 3/4
3	1.72	0.70	pasture	pasture
4	1.81	0.73	residential (grass, trees, 1 bldg.)	med. sized trees - 3/4 residential (2 bldgs.) - 1/4
5	7.54	3.05	cultivated	cultivated (25% contour)
6	2.51	1.02	cultivated	cultivated (contour)
7	9.48	3.84	cultivated	cultivated (contour)
8	8.20	3.32	cultivated	cultivated
9	3.84	1.55	grass (non-residential)	old field (brushy) - 3/4 med. sized trees - 1/4
10	1.37	0.55	cultivated	small trees
11	21.21	8.59	med. sized trees	large trees (1 bldg.)
12	26.82	10.85	pasture	cultivated - 7/8 med. sized trees (1 bldg.) - 1/8
13	2.91	1.18	med. sized trees	med. sized trees- 7/8 residential (2 bldgs.) - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
14	2.51	1.01	old field (brushy)	open water - 1/2 grass (non- residential) - 1/2
15	0.97	0.39	residential (trees, garden 1 bldg.)	residential (3 bldgs.)
16	6.40	2.59	cultivated	pasture - 7/8 paved (2 bldgs.) - 1/8
17	16.54	6.69	cultivated (1 bldg.)	pasture - 3/4 med. sized trees - 1/8 grass (barnyard, 2 bldgs.) - 1/8
18	16.05	6.50	cultivated	cultivated - 7/8 dump - 1/8
19	3.04	1.23	cultivated	cultivated
20	16.76	6.78	cultivated	old field (brush and small trees, 1 bldg.)
21	1.01	0.41	open water	open water (now 25% larger)
22	6.04	2.45	grass (non- residential)	cultivated - 1/8 old field (brush & trees) - 7/8
23	0.66	0.27	residential (1 bldg.)	residential (2 bldgs.)
24	2.82	1.14	old field (brushy)	old field (brushy)
25	7.54	3.05	cultivated (pasture ?)	cultivated - 7/8 small trees - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
26	7.76	3.14	large trees	large trees
27	11.20	4.53	pasture	pasture - 7/8 old field (weeds & brush) - 1/8
28	10.36	4.19	pasture	cultivated
29	8.16	3.30	cultivated	pasture - 5/8 cultivated - 1/4 med. sized trees - 1/8
30	7.45	3.01	cultivated (contour)	cultivated - 1/3 old field (brushy) - 2/3
31	11.86	4.80	pasture	pasture
32	7.50	3.03	pasture	pasture (1 bldg.) - 5/8 med. sized trees - 1/8 paved - 1/8 old field (brushy) - 1/8
33	1.94	0.79	large trees	large trees - 1/2 paved - 1/4 grass (non- residential) 1/4
34	1.94	0.79	residential (vacant, grass)	grass (non- residential), dirt road
35	10.06	4.07	pasture	old field (brushy)
36	12.53	5.07	cultivated	pasture - 1/2 residential (4 bldgs.) - 3/8 med. sized trees - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
37	1.01	0.41	residential (2-3 bldg.)	residential (1 bldg.)
38	2.29	0.93	cultivated	residential (3 bldgs.)
39	33.61	13.60	cultivated (contour)	cultivated - 7/8 old field (brushy) - 1/8
40	1.94	0.79	residential (2 bldgs.)	residential (2 bldgs.)
41	0.44	0.18	residential (1 bldg.)	grass (non- residential, 1 bldg.)
42	0.62	0.25	residential (1 bldg.)	residential (1 bldg.)
43	1.32	0.54	cultivated	grass (non- residential)
44	0.97	0.39	med. sized trees	residential (trees, 1 bldg.)
45	0.57	0.23	med. sized trees	residential ( 1 bldg.)
46	2.56	1.03	cultivated	cultivated
47	2.29	0.93	cultivated	cultivated - 3/4 old field (brushy)- 1/4
48	3.31	1.34	cultivated	residential (1 bldg.)
49	2.07	0.84	residential (grass, 1 bldg.)	residential (1 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
50	0.66	0.27	residential (1-2 bldg.)	residential (2 bldg.)
51	4.41	1.78	cultivated	pasture
52	10.01	4.05	cultivated	cultivated
53	0.62	0.24	med. sized trees	cultivated
54	2.29	0.93	med. sized trees	med. sized trees - 1/2 grass (non- residential) - 1/2
55	3.97	1.61	med. sized trees	med. sized trees - 7/8 residential (1 bldg.) - 1/8
**56	153.68	62.19	large trees	large trees
57	15.22	6.16	small trees	small trees
58	3.18	1.29	small trees	small trees
59	2.60	1.05	small trees	small trees
60	19.67	7.96	pasture	pasture
61	0.40	0.16	old field (weedy)	pasture
62	2.47	1.00	large trees	med. sized trees
63	2.03	0.82	residential (trees, grass and 1 bldg.)	residential (trees & grass)
64	0.79	0.32	med. sized trees	med. sized trees
65	0.62	0.25	med. sized trees	med. sized trees
66	19.10	7.73	pasture	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
67	2.12	0.86	pasture	pasture
68	4.19	1.70	old field (brushy) - 1/2 fresh marsh - 1/2	med. sized trees - 7/8 old field (brushy) - 1/8
69	0.71	0.29	residential (1 bldg.)	med. sized trees - 1/2 residential (1 bldg.) - 1/2
70	3.09	1.25	small trees	med. sized trees - 3/4 grass (non- residential)- 1/4
71	1.28	0.52	grass (non- residential)	med. sized trees
72	2.07	0.84	grass (non- residential)	med. sized trees - 3/4 old field (brushy) - 1/4
73	0.66	0.27	small trees	med. sized trees
74	1.72	0.70	small trees	med. sized trees
75	2.16	0.87	small trees	med. sized trees
76	1.98	0.80	large trees	med. sized trees
77	1.76	0.71	old field (brushy)	old field (brushy) - 2/3 med. sized trees (1 bldg.) - 1/3
78	1.41	0.57	residential (7 bldgs, most farm)	institutional (3 bldgs.)
79	1.23	0.50	small trees	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
**80	0.71	0.29	small trees	med. sized trees
**81	0.88	0.36	old field (brushy)	old field (brushy) - 1/3 med. sized trees - 2/3
**82	2.82	1.14	old field (brushy)	old field (brushy) - 3/4 med. sized trees - 1/4
**83	0.75	0.30	old field (brushy)	med. sized trees
**84	5.73	2.32	large trees	med. sized trees
**85	3.79	1.54	small trees	small trees
**86	9.53	3.86	old field (brushy)	small trees - 3/4 old field (brushy) - 1/4
**87	1.81	0.73	small trees	med. sized trees
**88	6.57	2.66	large trees	large trees
**89	1.59	0.64	salt marsh	salt marsh
**90	1.37	0.55	salt marsh	salt marsh
91	1.54	0.62	old field (brushy)	small trees
92	3.84	1.55	fresh marsh	fresh marsh - 5/8 med. sized trees - 3/8
93	1.10	0.45	cultivated- 1/2 old field (brushy) - 1/2	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
94	1.32	0.54	cultivated - 1/3 residential - 2/3	cultivated - 1/3 residential (grass) - 2/3
95	0.88	0.36	pasture	cultivated - 3/4 (grass, road fill) - 1/4

\*\* Number 56 is 28.78% below weir at road

\*\* Numbers 80 thru 90 are entirely below weir.

Table Summary of Land use Categories on Bluejay Branch Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	16.58	6.71	3.4	27.82	11.26	5.8	11.25	4.55	+ 2.3	4.38 ha below weir.
Med. Sized Trees	60.63	24.54	12.6	75.21	30.44	15.6	14.58	5.90	+ 3.0	0.36 ha below weir
Large Trees	136.43	55.21	28.4	133.36	53.97	27.7	3.08	1.25	- 0.6	9.76 ha below weir
Cultivated	168.71	68.28	35.3	116.60	47.19	24.2	52.11	21.09	- 11.0	
Pasture	52.41	21.21	10.9	57.21	23.15	11.9	4.80	1.94	+ 1.0	564
Other Grass (non residential)	8.52	3.45	1.8	10.31	4.17	2.1	1.79	0.72	+ 0.4	
Old Field (brushy)	23.99	9.71	5.0	28.17	11.40	5.2	4.18	1.69	+ 0.9	
Bare	0	0	0	0.94	0.38	0.2	0.94	0.38	+ 0.2	
Paved	0	0	0	2.14	0.87	0.4	2.14	0.87	+ 0.4	
Dump	0	0	0	0.71	0.29	0.2	0.71	0.29	+ 0.2	
Open Water	0.62	0.25	0.1	2.71	1.10	0.6	2.09	0.85	+ 0.4	
Residential (completed)	9.04	3.66	1.9	23.51	9.51	4.1	14.46	5.85	+ 3.0	

Table (Continued)

Category	1957		1972		Change		Notes
	acres	ha	acres	ha	acres	ha	
Fresh Marsh	2.87	1.16	0.6	2.14	0.87	0.4	0.74
Total (sum of parts)	479.80	194.17	100.0	480.81	194.58	100.0	- - -
Total (margin planimeter)	476.68	192.91	-	477.71	193.32	-	- - -
Error	-	-	0.6	-	-	0.6	- - -

Buildings in 1957: 26 (15 residential, 11 farm)

Buildings in 1972: 39 (20 residential, 19 farm).

Land use Map of Blue Jay Branch Subwatershed.

Maps see back. Blue Jay Map  
as on 555.

N. Br. Muddy 101

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Table Details of Land use in Individual Areas on Bluejay Branch Subwatershed

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	8.94	3.62	large trees	large trees
2	0.11	0.05	residential (2 bldgs.)	med. sized trees
3	7.11	2.88	med. sized trees	med. sized trees
4	6.12	2.48	cultivated	cultivated - 3/4 residential (2 bldgs.) - 1/4
5	1.43	0.58	grass (non-residential)	old field (brushy)
6	1.56	0.63	residential (grass, 2-3 bldgs.)	residential (2 bldgs.)
7	2.91	1.18	cultivated	grass (residential ?) - 1/2 bare soil - 1/2
8	1.43	0.58	small trees	med. sized trees
9	1.88	0.76	grass (road fill)	grass (non-residential) - 1/2 bare soil - 1/2
10	2.73	1.10	small trees (and brush)	pasture (1 bldg.) - 3/4 med. sized trees - 1/8 open water - 1/8
11	0.22	0.09	cultivated	cultivated - 1/4 residential - 3/4
12	3.62	1.47	cultivated	cultivated - 3/4 residential (1 bldg.) - 1/4
13	3.49	1.41	pasture	pasture - 3/4 residential (2 bldgs.) - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
14	1.97	0.80	cultivated	residential (1 bldg.)
15	13.09	0.65	cultivated	cultivated
16	3.04	1.23	cultivated	cultivated
17	1.48	0.60	cultivated	cultivated
18	4.92	1.99	old field (weedy, 1 bldg.)	cultivated (1 bldg.)
19	1.56	0.63	grass (road fill)	med. sized trees      3/4 grass (non- residential) - 1/4
20	1.83	0.74	old field (weedy)	cultivated
21	7.60	3.08	pasture	pasture
22	1.79	0.72	cultivated	small trees
23	2.55	1.03	cultivated	small trees
24	2.01	0.81	pasture	cultivated - 1/2 old field (brushy) - 1/2
25	4.25	1.72	cultivated	old field (brushy)
26	4.92	1.99	cultivated	cultivated
27	1.03	9.55	residential (garden, 1 bldg.)	residential (garden, 2 bldgs.)
28	1.12	0.45	pasture	cultivated
29	0.94	0.38	cultivated	cultivated
30	4.70	1.90	cultivated	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
31	0.94	0.38	cultivated	cultivated
32	6.62	2.53	pasture	cultivated
33	52.00	21.04	med. sized trees	med. sized trees
34	0.36	0.14	old field (weedy)	grass (non- residential)
35	1.07	0.43	old field (brushy)	pasture
36	5.19	2.10	cultivated	pasture
37	2.68	1.09	old field (brushy, 1 bldg.)	med. sized trees - 3/4 cultivated (1 bldg.) - 1/4
38	6.53	2.64	cultivated	pasture
39	5.41	2.19	cultivated	residential (1 bldg.)
40	1.03	0.42	residential (4-5 bldgs.)	residential (2 bldgs.)
41	1.88	0.76	cultivated	cultivated
42	11.98	4.85	cultivated	cultivated
43	4.87	1.97	cultivated	cultivated (1 bldg.) - 7/8 residential (1 bldg.) - 1/8
44	0.54	0.22	residential (2 bldgs.)	cultivated (1 bldg.)
45	1.83	0.74	cultivated (several small fields)	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
46	0.63	0.25	residential ( 1 bldg.)	residential ( 2 bldgs.)
47	4.11	1.66	cultivated	cultivated (1 bldg.) - 7/8 residential (grass) - 1/8
48	2.77	1.12	cultivated (contour ?)	pasture
49	10.73	4.34	cultivated (contour ?)	old field small trees - 3/8 cultivated - 1/8
50	4.96	2.01	cultivated	cultivated
51	2.10	0.85	small trees	med. sized trees
52	16.41	6.64	pasture	cultivated - 1/3 old field (brush & trees) - 2/3
53	1.79	0.72	small trees	small trees (pine)
54	2.10	0.85	residential (roads, grass, 4-5 bldg.)	grass (barnyard, 8 bldgs.) - 3/4 residential (1 bldg.) - 1/4
55	8.94	3.62	cultivated	cultivated
**56	127.59	51.64	large trees	large trees - 98% grass (non- residential) - 1% paved - 1%
57	0.63	0.25	open water	open water
58	0.89	0.36	med. sized trees	med. sized trees
59	2.15	0.87	old field (brushy)	open water - 1/2 med. sized trees - 1/4 grass (non- residential) - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
60	2.01	0.81	cultivated	open water - 1/3 cultivated - 1/3 grass (non-residential) - 1/3
61	3.04	1.23	cultivated	cultivated - 1/2 small trees (and brush) - 1/2
62	6.12	2.48	cultivated	cultivated - 2/3 old field (brushy) - 1/3
63	9.70	3.93	cultivated (1 bldg.)	cultivated (1 bldgs. twice former size)
64	5.14	2.08	cultivated	cultivated - 1/2 small trees - 1/4 old field (brushy) - 1/4
65	8.81	3.56	cultivated (and pasture ?)	cultivated - 1/2 pasture - 1/2
66	4.56	1.85	old field (brushy)	pasture - 3/4 small trees - 1/4
67	0.85	0.34	old field (brushy)	small trees
68	1.07	0.43	old field (weedy)	small trees - 1/2 cultivated - 1/2
69	1.56	0.63	cultivated	small trees
70	1.03	0.42	cultivated	med. sized trees
71	1.34	0.54	cultivated	residential (1 bldg.) - 5/8 paved - 3/8

turn page to next

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Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
36	1.61	0.65	grass (non-residential) - 3/4 residential (1 bldg.) - 1/4	grass (barn-yard, 1 bldg.)
87	1.70	0.69	cultivated	cultivated
38	0.89	0.36	cultivated	cultivated
89	1.52	0.62	residential (3 bldg.) - 4/5	cultivated - 3/8 residential (1 bldg.) - 5/8
90	7.96	3.22	cultivated	pasture - 91% dump - 9%

\*\* 56 is 18.08% below weir. % is wrong

\*\* Numbers 80, 81, and 82 are entirely below weir. % is wrong

*This page is revised*

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Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
72	11.53	4.67	pasture	pasture
73	1.48	0.60	pasture	pasture
74	1.34	0.54	cultivated	pasture
75	2.64	1.07	cultivated	cultivated - 3/5 old field (brush and trees) - 1/5 residential (1 bldg.) - 1/5
76	2.10	0.85	cultivated	med. sized trees - 1/2 grass (non- residential) - 1/2
77	4.29	1.74	cultivated	cultivated - 2/3 med sized trees - 1/3
78	1.79	0.72	old field (brushy)	med. sized trees
79	2.86	1.16	fresh marsh	fresh marsh - 3/4 med. sized trees - 1/4
**80	0.45	0.18	residential (bldg. outside subwatershed)	small trees
**81	0.89	0.36	small trees	med. sized trees
**82	10.37	4.20	small trees	small trees
83	1.34	0.54	cultivated	old field (brushy, 1 bldg.)
84	3.26	1.32	grass (barnyard, 4 bldgs.) - 3/4 cultivated - 1/4	grass (barnyard, 3-4 bldgs.)
85	0.67	0.27	med. sized trees	med. sized trees

Table 1 Summary of Land use Categories on Williamson Branch Subwatershed above the Weir.

## Table (continued)

Buildings in 1957: 7 (7 residential).

Buildings in 1972: 20 (20 residential).

Table Summary of Land use Categories on Williamson Branch Subwatershed below the Weir.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	3.93	1.59	4.9	3.95	1.60	4.8	0.02	0.01	+0.02	
Med. Sized Trees	8.77	3.55	10.7	15.11	6.11	18.5	6.34	2.57	+7.8	
Large Trees	22.29	9.02	27.3	19.15	7.75	23.5	3.14	1.27	-3.8	
Cultivated	18.50	7.49	22.7	9.44	3.82	11.6	9.06	3.67	-11.1	
Other Grass (non-residential)	0	0	0	1.31	0.53	1.6	1.31	0.53	+1.6	
Old Field (brushy)	14.60	6.03	18.2	3.88	1.57	4.8	11.02	4.46	-13.5	
Residential (completed)	7.25	2.93	8.9	19.47	7.88	23.9	12.22	4.95	+15.0	
Bare	0	0	0	1.33	0.54	1.6	1.33	0.54	+ 1.6	
Paved	0	0	0	0.94	0.38	1.2	0.94	0.38	+ 1.2	
Dump	0.28	0.11	0.3	1.33	0.54	1.6	1.05	0.42	+ 1.3	
Salt Marsh	5.74	2.32	7.0	5.74	2.32	7.0	0	0	0	
Total (sum of parts)	81.66	33.95	100.0	81.63	33.03	100.0	-	-	-	
Total (margin planimeter)	80.90	32.74	-	80.90	-	-	-	-	-	
Error	-	-	0.9	-	-	0.9	-	-	-	

Table (continued)

Buildings in 1957: 18 (16 residential, 2 farms).

Buildings in 1972: 24 (21 residential, 3 farms).

Land use Map of Williamson Branch Subwatershed.

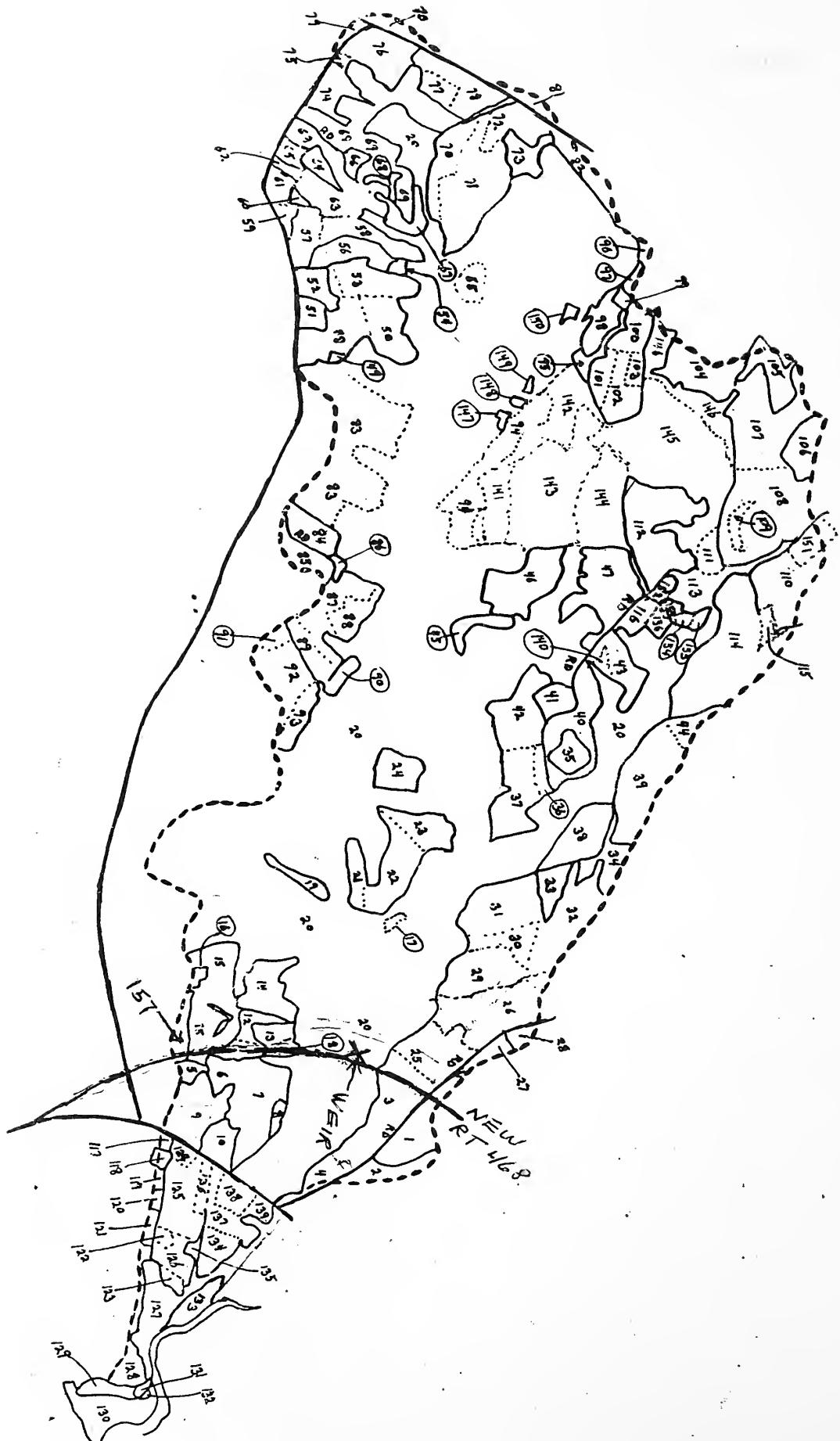


Table Details of Land use in Individual Areas on Williamson Branch  
Subwatershed.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
**1	4.01	1.62	cultivated	cultivated - 1/2 med. sized trees & dump - 3/8 residential (grassy) - 1/8
**2	2.23	0.90	old field & small trees	med. sized trees
**3	6.90	2.79	cultivated	cultivated
**4	1.43	0.58	residential (farm)	residential (garden, 2 bldgs.)
**5	0.85	0.34	residential (grassy, 1 bldg.)	residential (1 bldg.)
**6	1.47	0.59	old field (brushy)	med. sized trees - 1/3 residential (grassy, 2 bldgs.) - 2/3
**7	6.41	2.60	small trees	(combined with number 6.)
**8	0.58	0.23	old field (weeds & brush)	med. sized trees
**9	4.85	1.96	large trees	large trees - 1/2 residential (3- bldgs.) - 1/2
**10	2.05	0.83	residential (grassy, 3 bldgs.)	residential (3 bldgs.)
**11	1.29	0.52	large trees	paved - 3/8 grass (non-residential)-3/8 med. sized trees - 1/4
12	1.20	0.49	small trees	bare soil - 3/4 med. sized trees - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
13	1.16	0.47	cultivated	paved - 1/3 grass (non-residential) - 2/3
14	3.65	1.48	cultivated	cultivated - 2/5 bare soil - 3/10 old field (brushy) - 1/5 residential (1 bldg.) 1/10
**15	7.39	2.99	cultivated (with 2 tree clumps)	old field - 3/5 paved - 1/10 bare soil - 1/10 large trees - 1/5
16	0.58	0.23	old field (brushy)	old field (brushy)
17	0.31	0.13	old field (brushy)	small trees
**18	0.58	0.23	small trees	grass - 1/2 paved - 1/2
19	1.02	0.41	cultivated	small trees
**20	276.55	111.92	large trees	med. sized trees
21	1.74	0.70	cultivated	old field (brushy) - 3/4 med. sized trees - 1/4
22	4.45	1.80	cultivated	pasture
23	3.03	1.23	cultivated	pasture
24	2.45	0.99	cultivated	old field (brushy)
25	4.32	1.75	cultivated	cultivated - 3/8 paved - 1/8 grass (non- residential) - 1/4 residential (1 bldg.) - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
26	7.30	2.96	cultivated	cultivated - 1/2 med. sized trees - 3/8 residential (2 bldgs.) - 1/8
27	0.98	0.40	med. sized trees	med. sized trees
28	0.71	0.29	residential (2 bldgs.)	med. sized trees
29	4.45	1.80	cultivated	cultivated
30	2.23	0.90	pasture	cultivated - 1/2 old field (brushy) - 1/2
31	5.66	2.29	cultivated	cultivated
32	6.10	2.47	old field (brushy)	med. sized trees - 3/4 cultivated - 1/4
33	1.78	0.72	med. sized trees	med. sized trees
34	2.45	0.99	small trees	small trees (half pine)
35	1.69	0.68	open water	open water - 2/3 grass (non-residential) - 1/3
36	1.02	0.41	residential (2 bldgs.)	grass (non-residential) - 1 bldg
37	4.90	1.98	cultivated	cultivated (1 bldg)
38	4.05	1.64	cultivated	pasture - 7/8 med. sized trees - 1/8
39	7.08	2.87	pasture	cultivated
40	4.99	2.02	cultivated	pasture - 7/8 med. sized trees - 1/8
41	1.78	0.72	med. sized trees (small grassy areas)	residential (2 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
42	4.77	1.93	cultivated	pasture - 2/3 med. sized trees - 1/3
43	2.81	1.14	cultivated	pasture
44	1.38	0.56	cultivated	pasture
45	1.56	0.63	old field (weedy)	pasture - 3/4 med. sized trees - 1/4
46	5.25	2.13	cultivated	pasture - 7/8 med. sized trees - 1/8
47	6.50	2.63	cultivated	pasture - 7/8 residential (1 bldg.) - 1/8
48	4.85	1.96	cultivated	cultivated - 3/4 residential (2 bldgs.) - 1/4
49	0.27	0.11	old field (brushy) - 1 bldg.	med. sized trees
50	3.43	1.39	cultivated	cultivated - 2/3 med. sized trees - 1/3
51	1.34	0.54	residential (1-2 bldgs., gardens)	residential (1 bldg.)
52	1.96	0.79	residential (1 bldg.,trees)	residential (2 buildings)
53	3.56	1.44	cultivated	old field (brushy)
54	0.36	0.14	old field (brushy)	med. sized trees
55	1.34	0.54	small trees	small trees
56	2.67	1.08	med. sized trees	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
57	2.54	1.03	cultivated	old field (brushy)
58	2.85	1.15	cultivated	old field (brushy)
59	0.62	0.25	residential (1 bldg.)	residential (1 bldg.)
60	0.45	0.18	med. sized trees	old field (brushy) - 1/2 med. sized trees - 1/2
61	1.43	0.58	cultivated	residential (1 bldg.)
62	0.62	0.25	residential (1 bldg.)	residential (1 bldg.)
63	6.50	2.63	pasture	old field (brushy) - 1/2 med. sized trees - 1/4 residential (grass, garden)- 1/4
64	1.16	0.47	med. sized trees	med. sized trees
65	8.02	0.32	residential (1 bldg, garden)	residential (1 bldg.)
66	0.85	0.34	residential (1 bldg)	residential (1 bldg.)
67	1.83	0.74	old field (brushy)	small trees
68	0.71	0.29	med. sized trees	med. sized trees
69	11.62	4.70	cultivated	small trees
70	2.89	1.17	cultivated	old field (brushy)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
71	8.37	3.39	cultivated	old field (brushy)
72	2.27	0.92	cultivated	bare soil - 3/4 small trees - 1/4
73	2.23	0.90	old field (brushy)	med. sized trees- 3/4 bare soil - 1/4
74	2.76	1.12	old field (brushy)	med sized trees
75	0.49	0.20	residential (1 bldg.)	med. sized trees
76	3.87	1.51	old field (brushy)	med. sized trees - 3/4 pasture - 1/4
77	1.11	0.45	old field (brushy)	small trees
78	3.96	1.60	cultivated	old field (brushy)
79	0.36	0.14	pasture	cultivated
80	1.34	0.54	cultivated	residential (grassy) - 1/2 cultivated - 3/8 road fill - 1/8
81	1.38	0.56	cultivated	cultivated - 2/3 old field (brushy) - 1/3
82	2.45	0.99	cultivated	cultivated
83	13.98	5.66	small trees	small trees
84	2.54	1.03	pasture	small trees - 1/2 pasture - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
85	2.23	0.90	pasture	pasture
86	0.31	0.13	residential (1 bldg.)	residential (1 bldg.)
87	3.96	1.60	pasture	pasture - 1/2 med. sized trees - 1/2
88	2.14	0.87	old field (brushy)	med. sized trees
89	2.00	0.81	cultivated	cultivated - 1/4 pasture (1 bldg.) - 1/2 med. sized trees - 1/4
90	0.98	0.40	cultivated	med. sized trees
91	0.85	0.34	residential	residential (vacant) & paved tennis court - 1/2 old field (brushy) - 1/2
92	3.25	1.32	cultivated	pasture - 1/4 old field (brushy) - 3/4
93	1.83	0.74	cultivated	med. sized trees
94	6.68	2.70	small trees	small trees
95	1.43	0.58	old field (brushy)	med. sized trees
96	0.36	0.14	residential (bldgs. outside watershed)	residential (1 bldg.)
97	0.76	0.31	residential (bldgs. outside watershed)	residential (1 bldg.)
98	1.96	0.79	cultivated	old field (brushy)
99	0.67	0.27	residential (1 bldg.)	residential (1 bldg.) - 1/2 old field (brushy) - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
100	2.14	0.87	cultivated	old field (brushy)
101	1.65	0.67	cultivated	old field (brushy)
102	2.63	1.06	cultivated	old field (brushy)
103	0.89	0.36	cultivated	old field (brushy)
104	4.36	1.76	cultivated	residential (bldg outside watershed)
105	2.72	1.10	med. sized trees	med. sized trees - 3/4 cultivated - 1/4
106	2.45	0.99	med. sized trees	med. sized trees
107	8.33	3.37	cultivated	pasture
108	9.71	3.93	cultivated	pasture
109	0.89	0.36	old field (brushy)	small trees
110	4.81	1.95	cultivated	pasture
111	1.29	0.52	old field (brushy)	med. sized trees
112	8.15	3.30	cultivated	residential (grassy, 1 bldg.)
113	3.87	1.57	med. sized trees	med. sized trees
114	12.34	4.99	small trees	med. sized trees - 1/8 small trees - 3/8 pasture - 1/2
115	0.89	0.36	residential (1-2 bldgs.)	small trees - 1/3 pasture - 2/3

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
116	1.47	0.59	cultivated	pasture
**117	0.22	0.09	med. sized trees	med. sized trees
**118	0.45	0.18	residential (1 bldg.)	residential (1 bldg.)
**119	0.22	0.09	cultivated	cultivated
**120	0.36	0.14	residential	residential (1 bldg, trees)
**121	0.58	0.23	cultivated	cultivated - 1/2 grass (non- residential) - 1/2
**122	0.45	0.18	residential ( 1 bldg.)	residential (trees)
**123	0.45	0.18	old field (brushy)	old field (brushy)
**124	0.80	0.32	med. sized trees	residential (grass & trees)
**125	4.23	1.71	cultivated	cultivated - 1/2 med. sized trees 1/8 residential (3 bldgs.) - 3/8
**126	1.83	0.74	cultivated	old field (brushy)
**127	4.45	1.80	med. sized trees	med. sized trees
**128	2.36	0.96	cultivated	old field (brushy) - 1/2 bare soil - 1/2
**129	1.25	0.50	small trees	med. sized trees
**130	4.23	1.71	salt marsh	salt marsh

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
**131	0.27	0.11	dump	old field
**132	0.09	0.04	med. sized trees	med. sized trees
**133	1.51	0.61	salt marsh	salt marsh
**134	2.00	0.81	old field (brushy)	small trees
**135	0.45	0.18	med. sized trees	med. sized trees
**136	0.80	0.32	old field (brushy)	residential (1 bldg.) - 2/3 small trees - 1/3
**137	2.27	0.92	old field (brushy)	residential (1 bldg.)-1/4 small trees - 3/4
**138	1.69	0.68	residential (1 bldg.)	residential (1 bldg.)
**139	0.80	0.32	old field (brushy)	grass ( non- residential )
140	0.49	0.20	old field (brushy)	pasture
141	3.12	1.26	small trees	small trees
142	5.08	2.05	small trees	small trees
143	12.25	4.96	small trees	small trees - 3/4 old field (brushy) - 1/4
144	7.21	2.92	small trees	med. sized trees
145	16.74	6.78	small trees	med. sized trees
146	4.81	1.95	med. sized trees	med. sized trees
147	0.36	0.14	cultivated	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
148	0.13	0.05	cultivated	med. sized trees
149	0.18	0.07	cultivated	med. sized trees
150	0.36	0.14	cultivated	med. sized trees
151	1.25	0.50	cultivated	pasture
152	0.62	0.25	residential (1 bldg.)	residential (1 bldg.)
153	2.23	0.09	residential (1 bldg.)	med. sized trees
154	0.27	0.11	cultivated	old field (brushy)
155	0.45	0.18	residential	med. sized trees - 1/2 grass (non-residential) - 1/2
156	0.67	0.27	cultivated	old field (brushy)
157	1.60	0.65	old field	paved - 1/4 med. sized trees - 1/4 old field (brushy) - 1/2
**158	2.45	0.99	med. sized trees	med. sized trees - 7/8 residential (1 bldg.) - 1/8

\*\* Numbers 1 - 88.89%, 3 - 72.90%, 11 - 55.17%, 15 - 3.01% 18 - 38.46%  
 . and 20 - 6.05% are all below the weir.  
 \*\* Numbers 2, 4 thur 10, 117 thur 139, and 158 are all entirely below the weir.

Table Summary of Land use Categories on Mill Swamp Branch Subwatershed (tributary of the Main Branch of Muddy Creek)

Category	1957			1972			Change acres	Change %	Notes
	acres	ha	%	acres	ha	%			
Small Trees	31.84	12.89	8.7	31.50	12.75	8.6	0.34	0.14	- 0.1
Med. Sized Trees	14.26	5.77	3.9	47.38	19.17	13.0	33.13	13.41	+ 9.1
Large Trees	73.88	29.90	20.3	53.14	21.51	14.6	20.73	8.39	- 5.7
Cultivated	136.55	55.26	37.5	48.99	19.83	13.4	87.56	35.43	-24.0
Pasture	63.89	25.86	17.6	124.06	50.21	34.0	60.17	24.35	+16.5
Other Grass (non residential)	6.66	2.70	1.8	9.96	2.82	1.9	0.30	0.12	+ 0.1
Old Fields (brushy)	14.90	6.03	4.1	13.22	5.35	3.6	1.68	0.68	- 0.5
Residential (completed)	12.21	4.94	3.4	23.21	9.39	6.4	11.00	4.45	+ 3.0
Institutional	5.28	2.14	1.4	6.04	2.44	1.7	0.76	0.31	+ 0.2
Bare	0	0	0	2.76	1.12	0.7	2.76	1.12	+ 0.8

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Paved	0	0	0	1.22	0.49	0.3	1.22	0.49	+ 0.3	New hwy. 468
Fresh Marsh and open water	3.12	1.26	0.9	3.12	1.26	0.9	0	0	0	
Swamp	1.56	0.63	0.4	2.57	1.04	0.7	1.01	0.41	+0.3	
Total (sum of parts)	364.14	147.36	100.0	364.16	147.37	100.0	-	-	-	
Total (margin planimeter)	362.92	146.87	-	362.93	146.87	-	-	-	-	
Error	-	-	0.3	-	-	0.3	-	-	-	

Buildings in 1957: 30 (16 residential, 13 farm, 1 other).

Buildings in 1972: 35 (23 residential, 11 farm, 1 other).

Land use Map of Mill Swamp Branch Subwatershed. (a tributary of main branch of Muddy Creek.)

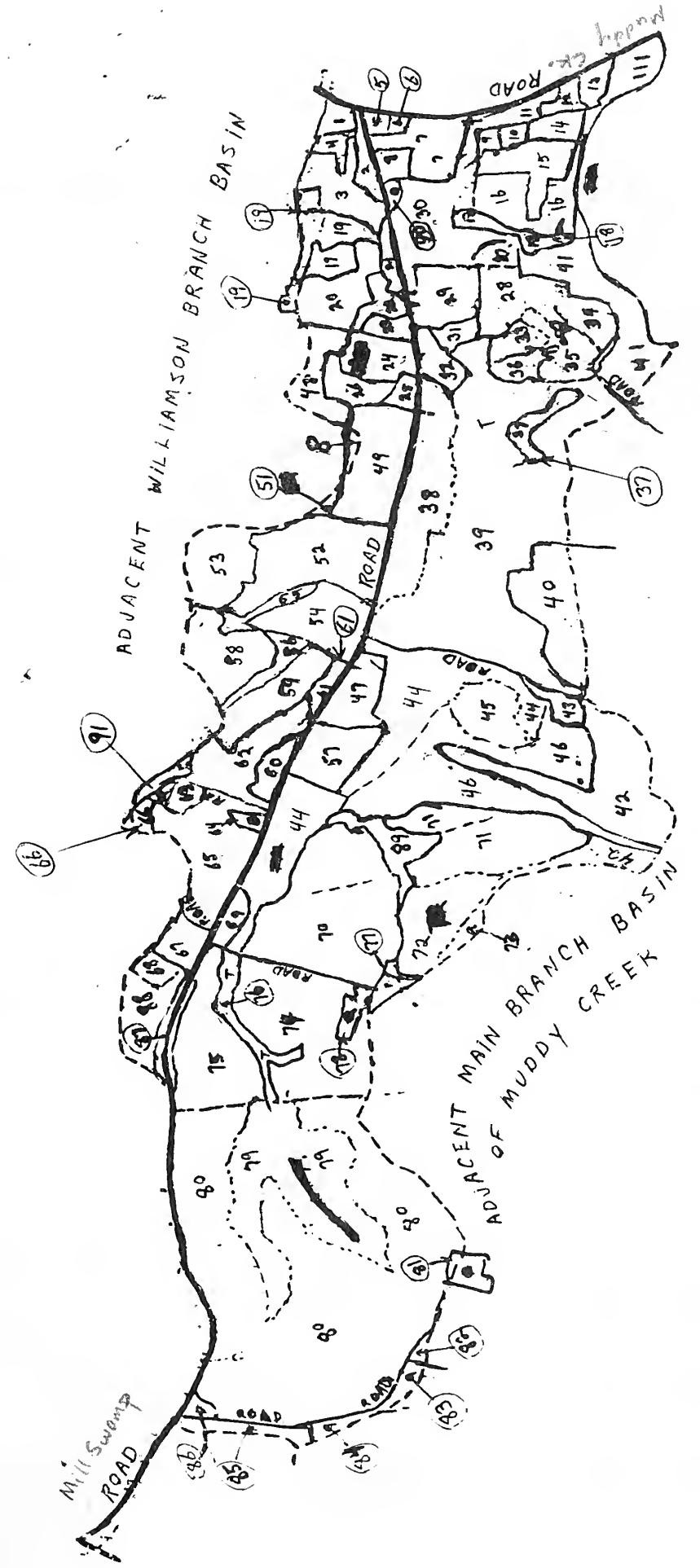


Table Details of Land use in Individual Areas on Mill Swamp Branch Subwatershed.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	0.81	0.33	cultivated	med. sized trees
2	1.25	0.51	med. sized trees	med. sized trees
3	3.27	1.32	cultivated (5 fields)	residential - 1/4 (1 bldg.) paved - 1/4 med. sized trees - 1/2
4	0.90	0.36	small trees	med. sized trees
5	0.63	0.25	residential (1 bldg.) (grass and trees)	residential (1 bldg.)
6	0.27	1.09	cultivated	bare soil
7	3.45	1.39	cultivated	paved - 1/8 grass - 7/8
8	0.81	0.33	small trees	grass - 1/2 paved - 1/2
9	0.45	0.18	residential (1 bldg.) (grassy)	residential (2 bldg.)
10	0.49	0.20	cultivated	residential (grassy)
11	1.25	0.51	grass (non-residential)	residential (1 bldg.) (grassy)
12	0.72	0.29	residential (2-3 bldg.) (grassy)	residential (2 bldg.) (grassy)
13	0.85	0.34	cultivated	residential (1 bldg.) (grassy)
14	1.16	0.47	old field (brushy)	grass - 1/2 trees - 1/2
15	3.31	1.34	cultivated (2 fields)	cultivated - 1/2 residential - 3/8 (1 bldg.) med. sized trees - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
16	3.85	1.56	old field/ small trees	cultivated - 1/3 residential - 1/3 med. sized trees - 1/3
17	1.25	5.07	large trees	old field - 1/2 bare soil - 1/2
18	1.52	0.62	open water (freshwater, marshy)	freshwater marsh
19	2.86	1.16	residential	residential
20	3.49	1.41	cultivated	old field - 3/4 residential - 1/4 (1 bldg. )
21	1.03	0.42	med. sized trees	med. sized trees
22	1.30	0.53	residential (4 bldg.) (grassy)	residential (5 bldg.)
23	0.85	0.34	institutional (grassy)	institutional (grassy)
24	2.64	1.07	institutional (bare)	institutional (paved & roof)
25	0.81	0.33	institutional (small trees)	institutional (small trees)
26	1.79	0.72	institutional (grassy)	institutional (grass & trees)
27	0.85	0.34	grass (non-residential) (2 farm bldgs.)	med. sized trees
28	3.98	1.61	cultivated	old field
29	3.22	1.30	residential (1 bldg.) (grass, trees)	residential (1 bldg.) (grass, trees.)

Table (continued)

Area No.	Area Size (area)	Area Size (ha)	Land use in:	
			1957	1972
30	7.43	3.01	large trees	med. sized trees - 1/2 grass - 1/4 bare soil - 1/4
31	0.72	0.29	cultivated	med. sized trees
32	1.61	0.65	open water (freshwater marshy)	open water (freshwater marshy)
33	1.34	0.54	cultivated	old field (1 bldg.)
34	1.88	0.76	grass (4-5 bldg.) (non-residential)	old field (1bldg.)
35	2.77	1.12	pasture	old field
36	1.21	0.48	old field (brushy)	med. sized trees
37	1.57	1.42	fresh marsh & swamp	fresh marsh & swamp
38	8.06	3.26	small trees	small trees - 7/8 open water (swampy) - 1/8
39	33.47	13.55	large trees	large trees - 9/10 residential - 1/10
40	5.82	2.35	cultivated	cultivated - 7/8 med. sized trees - 1/8
41	9.85	3.98	mature trees	med. sized trees
42	11.59	4.69	cultivated	cultivated
43	1.12	0.45	residential (1 bldg.)	residential (trees, 1 bldg.)
44	14.81	5.99	small trees	small trees
45	3.36	1.36	old field (brushy)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
46	13.87	5.61	large trees	large trees
47	2.82	1.14	cultivated	small trees
48	2.77	1.12	large trees	large trees
49	6.04	2.44	cultivated (pasture ?)	pasture - 1/2 (1 bldg.) med. sized trees - 3/8 institutional (grass) - 1/8
50			Not in Rhode River Watershed.	
51	0.40	0.16	large trees	large trees
52	8.41	3.40	pasture	pasture - 5/8 cultivated - 1/8 med. sized trees (1 bldg.) - 1/4
53	4.30	1.74	mature trees	med. sized trees - 7/8 cultivated - 1/8
54	4.48	1.81	pasture	med. sized trees - 1/4 pasture - 3/4
55	1.21	0.49	med. sized trees	med. sized trees
56	1.52	0.62	med. sized trees	med. sized trees
57	3.49	1.41	old field (brushy)	small trees
58	4.79	1.94	cultivated (2 fields)	cultivated
59	3.89	1.58	cultivated	pasture
60	1.61	0.65	pasture	pasture
61	1.03	0.42	med. sized trees	pasture
62	4.79	1.94	old field & small trees	med. sized trees - 7/8 residential (1 bldg.) - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
63	0.98	0.40	med. sized trees	residential (wooded)
64	0.54	0.22	med. sized trees	med. sized trees
65	7.61	3.08	cultivated	pasture
66	0.31	0.13	residential (2 bldgs.)	residential (2 bldgs.)
67	1.75	0.71	pasture	cultivated
68	0.90	0.36	old field (brushy)	cultivated - 1/2 med. sized trees - 1/2
69	1.07	0.43	cultivated	cultivated
70	14.68	5.94	cultivated	pasture
71	8.95	3.62	cultivated (2 fields)	cultivated (3-4 fields)
72	5.24	2.12	pasture (2 bldgs.)	pasture (1 bldg.)
73	0.98	0.40	cultivated	cultivated
74	11.99	4.85	cultivated	pasture
75	7.74	3.13	cultivated	cultivated
76	2.33	0.94	med. sized trees	med. sized trees
77	0.63	0.25	med. sized trees	residential (1 bldg.)
78	0.98	0.40	residential (trees, 1 bldg.)	residential (1 bldg.)
79	14.95	6.05	cultivated (contour)	pasture
80	48.82	19.76	cultivated & pasture	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
81	0.13	0.05	residential (1 bldg.)	residential ( 1 bldg.)
82	0.31	0.13	cultivated	cultivated
83	0.90	0.36	pasture	cultivated
84	0.67	0.27	cultivated	pasture
85	20.13	0.81	grass (non-residential) (5 bldgs.)	grass (non-residential) (5 bldgs.)
86	0.67	0.27	grass (non-residential) (1 bldg.)	grass (non-residential) (2 bldgs.)
87	1.83	0.74	large trees	med. sized trees
88	3.45	1.39	small trees	med. sized trees - 7/8 cultivated - 1/8
89	2.51	1.01	med. sized trees	large trees
90	0.49	0.20	residential (1 bldg.)	residential (1 bldg.)
91	0.72	0.29	pasture	cultivated - 5/8 residential (grassy) - 3/8

Table Summary of Land use Categories on the Main Branch of Muddy Creek Subwatershed above Mill Swamp and excluding the Mill Swamp Branch Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	103.58	41.92	4.9	114.72	46.43	5.5	11.13	4.50	+0.6	
Med. Sized Trees	23.99	9.71	1.1	102.76	41.59	4.9	78.76	31.87	+3.8	
Large Trees	895.41	362.36	42.4	852.09	344.83	40.7	43.32	17.53	-1.7	
Cultivated	699.86	283.23	33.1	467.58	189.22	22.4	232.28	94.00	-10.8	
Pasture	219.35	88.77	10.4	131.66	53.28	6.3	87.70	35.49	-4.1	
Other grass (non-residential)	14.12	5.71	0.7	76.63	31.01	3.7	62.51	25.30	+3.0	
Old Field (brushy)	102.20	41.36	4.8	168.18	68.06	8.0	65.98	26.70	+3.2	
Residential (completed)	40.52	16.40	1.9	85.15	34.46	4.1	44.63	18.06	+2.2	
Commercial	0.46	0.19	0.02	4.59	1.86	0.2	4.13	1.67	+0.2	New Balt. Gas
Institutional	2.41	0.98	0.1	10.40	4.21	0.5	7.99	3.23	+0.4	and Elect. Pow
Bare	3.83	1.55	0.2	64.83	26.24	3.1	61.00	24.69	+2.9	line accounted

Table (Continued)

Category	1957			1972			Change acres ha	% Notes
	acres	ha	%	acres	ha	%		
Paved	0	0	0	6.43	2.60	0.3	6.43 2.60	+0.3 most of increase
Dump	0	0	0	1.54	0.62	0.1	1.54 0.62	+0.1 in 'other grass' and 'bare' areas.
Open Water	0	0	0	2.82	1.14	0.1	2.82 1.14	+0.1
Fresh Marsh and Swamp	5.95	2.41	0.3	3.12	1.26	0.1	2.82 1.14	-0.1
Total (sum of parts)	2111.68	854.58	100.0	2092.49	846.81	100.0	- -	- -
Total (margin plani- meter)	2098.30	849.16	-	2098.30	849.16	-	- -	- -
Error	-	-	0.6	-	-	0.3	- -	- -

Buildings in 1957: 53 (44 residential, 7 farm, 2 others).

Buildings in 1972: 97 (72 residential, 22 farm, 3 others).

Land use Map of Main Branch of Muddy Creek Subwatershed (above Mill Swamp and excluding Mill Swamp Branch).

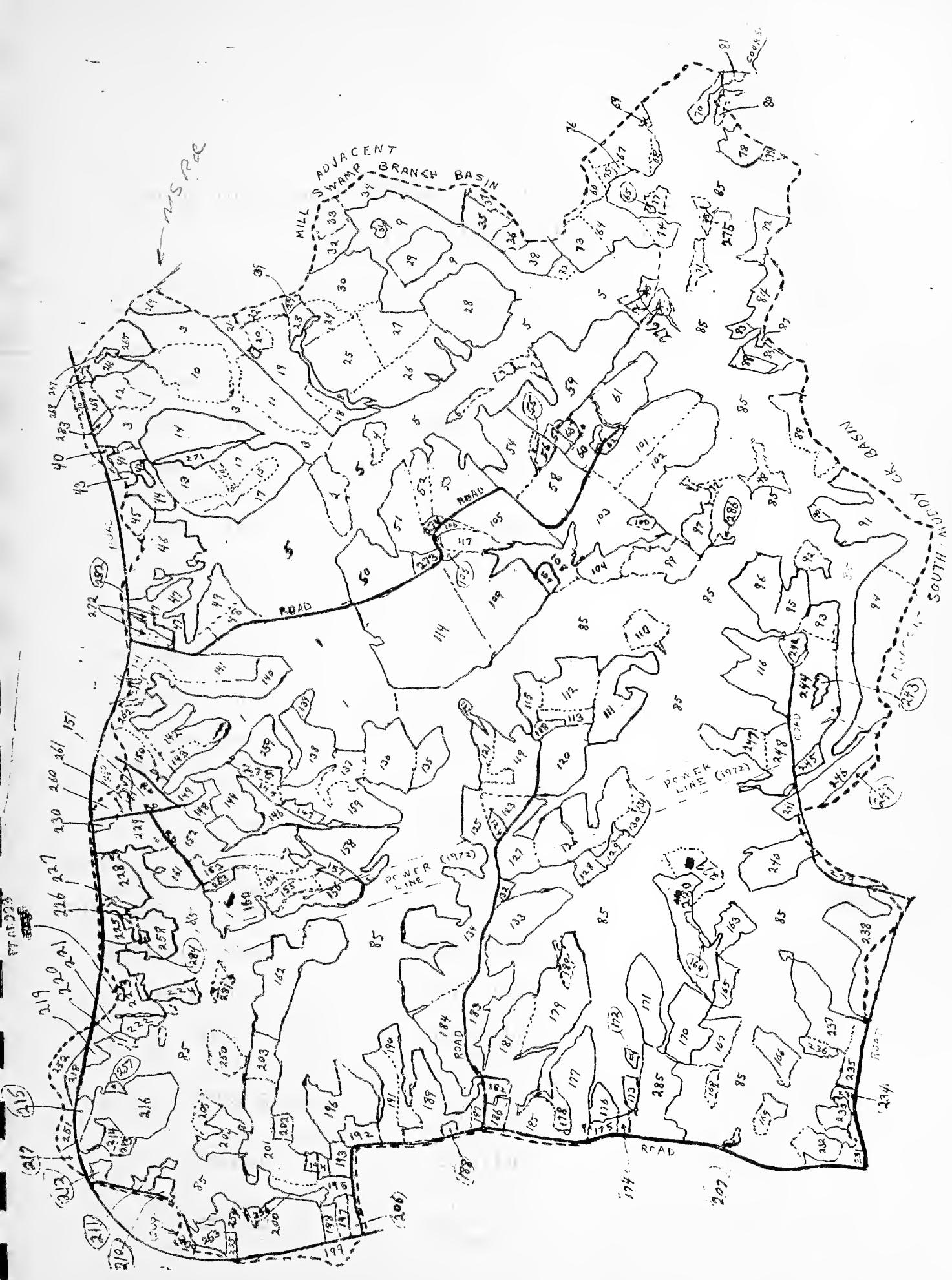


Table Details of Land use in Individual Areas on the Main Branch of  
Muddy Creek Subwatershed above Mill Swamp.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	55.39	22.42	large trees	large trees
2	4.74	11.33	small trees	small trees
3	27.99	11.33	large trees	large trees - 2/3 pasture (hay) - 1/3
4	1.70	0.69	small trees	small trees
5	118.87	48.11	large trees	large trees
6	1.16	0.47	small trees	med. sized trees
7	2.06	0.83	small trees	med. sized trees
8	2.86	1.16	med. sized trees	med. sized trees
9	24.14	9.77	large trees	large trees (one very small field)
10	11.40	4.61	small trees	pasture - 1/2 cultivated (hay, 1 bldg.) - 1/4 bare soil (barn- yard, 1 bldg.) - 1/4
11	7.73	3.13	small trees	med. sized trees
12	4.20	1.70	small trees	small trees
13	6.26	2.53	cultivated (contour)	pasture
14	10.95	4.43	cultivated (contour)	pasture
15	3.58	1.45	cultivated (contour)	pasture
16	1.11	0.45	cultivated (contour)	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
17	9.97	4.03	cultivated	pasture
18	3.35	1.36	cultivated	cultivated - 1/2 old field (brushy) - 1/2
19	8.36	3.38	pasture	cultivated (1 bldg.)
20	1.43	0.58	cultivated	cultivated
21	2.06	0.83	cultivated	cultivated
22	2.32	0.94	cultivated	cultivated
23	1.56	0.63	cultivated	cultivated
24	3.31	1.34	old field (brushy)	pasture
25	10.64	4.31	cultivated (pasture ?)	old field (brushy) - 1/2 small trees - 1/2
26	12.47	5.05	cultivated (pasture ?)	cultivated - 1/2 small trees - 1/2
27	7.64	3.09	cultivated (pasture ?)	old field (brushy) - 1/2 small trees - 1/2
28	14.44	5.84	cultivated	cultivated
29	6.04	2.44	cultivated	cultivated
30	10.01	4.05	pasture	pasture
31	0.54	0.22	residential (1 bldg.)	large trees
32	3.58	1.45	pasture	pasture
33	2.40	0.96	cultivated	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
34	7.96	3.22	cultivated	cultivated
35	3.35	1.36	cultivated	cultivated
36	1.56	0.63	cultivated	cultivated
37	1.65	0.67	cultivated	cultivated - 1/2 residential (1 bldg.) - 1/2
38	3.84	1.56	cultivated	cultivated - 7/8 small trees - 1/8
39	0.54	0.22	residential (2 bldgs.)	residential (1 bldg, 2nd bldg. outside subwatershed)
40	0.49	0.20	residential (1 bldg.)	med. sized trees (1 bldg.)
41	2.24	0.90	grass (non-residential)	med. sized trees - 1/2 residential (grassy)-3/8 cultivated -1/8
42	0.80	0.33	cultivated	cultivated - 3/4 residential (1 bldg.) - 1/4
43	0.72	0.29	residential	residential (2 bldg.)
44	3.35	1.36	old field (brushy)	cultivated - 1/2 old field (brushy) - 2/5 small trees - 1/10
45	2.73	1.10	cultivated	cultivated - 3/4 residential (1 bldg.) - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
46	10.15	4.11	cultivated	cultivated residential (5 farm bldgs.) -1/8 old field (brushy) -3/8
47	7.79	3.15	cultivated	med. sized trees - 2/5 cultivated - 1/4 old field (brushy)-1/4 residential (1bldg.) -1/10
48	2.91	1.18	cultivated	med. sized trees - 1/2 residential (1 bldg.)-1/2
49	4.69	1.90	old field (brushy)	med. sized trees - 4/5 old field (brushy)-1/5
50	9.79	3.96	cultivated	cultivated
51	7.73	3.13	pasture	cultivated - 3/4 grass (non-residential)- 1/4 2 bldgs.
52	2.91	1.18	cultivated	cultivated
53	9.66	3.91	pasture	cultivated - 2/5 pasture (recently abandoned ?) - 3/5
54	9.39	3.80	cultivated	cultivated - 9/10 grass (non-residential)- 1/10
55	0.45	0.18	grass (non-residential)	old field (brushy)
56	1.43	0.58	cultivated	old field (brushy)
57	1.30	0.52	med. sized trees	med. sized trees
58	8.72	3.53	cultivated	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
59	19.04	7.71	pasture	cultivated - 3/8 old field (brushy) - 1/2 med. sized trees - 1/8
60	4.87	1.97	cultivated	cultivated - 1/4 old field (brushy) - 3/4
61	8.05	3.26	cultivated	cultivated - 3/4 old field (brushy) - 1/4
62	1.48	0.60	med. sized trees	med. sized trees
63	1.03	0.42	old field (brushy)	med. sized trees
64	6.21	2.51	cultivated	cultivated
65	0.22	0.09	grass (non- residential)	small trees
66	2.32	0.94	residential (trees, grass, 2 bldgs.)	residential (2 bldgs.)
67	7.33	2.97	cultivated	cultivated
68	0.76	0.31	cultivated	small trees
69	0.18	0.07	cultivated	small trees
70	1.61	0.65	cultivated	small trees
71	1.70	0.69	fresh marsh or swamp	fresh marsh or swamp
72	3.53	1.43	cultivated	cultivated - 7/8 med. sized trees - 1/8
73	5.23	2.12	cultivated	cultivated
74	2.15	0.87	cultivated	cultivated (pasture ?)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
75	0.80	0.33	cultivated	cultivated
76	0.63	0.25	old field (brushy)	cultivated
77	1.30	0.52	small trees	small trees
78	3.53	1.43	cultivated	small trees & brush
79	0.72	0.29	old field (brushy)	med. sized trees
80	0.31	0.13	fresh marsh or swamp	fresh marsh or swamp
81	0.63	0.25	pasture	small trees
82	1.50	0.61	small trees	med. sized trees
83	0.67	0.27	cultivated	old field (brushy)
84	4.25	1.72	cultivated (2 bldgs.)	pasture - 1/2 cultivated - 1/4 med. sized trees (2 bldg.) - 1/4
85	666.89	269.88	large trees	large trees - 9/10 powerline (mostly bare), cultivated and old fields - 1/10
86	2.19	0.89	small trees	small trees
87	0.45	0.18	cultivated	pasture
88	1.79	0.72	cultivated	grass (non- residential)
89	5.14	2.08	small trees	med. sized trees
90	0.63	0.25	old field (brushy)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
90	0.63	0.25	old field (brushy)	small trees
91	15.20	6.15	cultivated	cultivated
92	2.32	0.94	small trees	grass (non- residential)
93	3.44	1.39	cultivated	cultivated - 3/4 (1 bldg.) grass (non- residential) - 1/5
94	17.08	6.91	cultivated	bare (powerline) - 1/5 cultivated - 4/5
95	4.56	1.85	cultivated	cultivated
96	7.02	2.84	cultivated	cultivated
97	4.25	1.83	old field (brushy)	small trees
98	2.82	1.14	freshwater marsh	small trees
99	6.08	2.46	old field (brushy)	small trees
100	0.76	0.31	old field (brushy)	med. sized trees
101	11.40	4.61	cultivated	cultivated (hay)-7/8 med. sized trees -1/8
102	11.27	4.56	cultivated	cultivated
103	13.46	5.45	pasture (1 bldg.)	cultivated - 7/8 old field (brushy, 1 bldg.)- 1/8
104	5.10	2.06	small trees	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
105	9.16	3.71	pasture	cultivated - 2/3 grass (non-residential) - 1/3
106	1.79	0.72	bare soil	grass (non-residential)
107	1.30	0.52	old field (brushy)	grass (non-residential) - 3/4 open water - 1/4
108	6.62	2.68	med. sized trees	grass (non-residential) - 1/2 open water - 3/8 med. sized trees - 1/8
109	17.08	6.91	cultivated	cultivated - 7/8 small trees - 1/8
110	4.16	1.68	old field (brushy)	old field (brushy)
111	9.66	3.91	cultivated	cultivated - 7/8 small trees - 1/8
112	7.02	2.84	cultivated	cultivated
113	1.92	0.78	cultivated	cultivated
114	30.62	12.39	pasture	cultivated - 3/4 old field (brushy) - 1/4
115	2.82	1.14	cultivated	small trees
116	9.75	3.94	pasture (1 bldg.)	pasture (1 bldg.) - 3/4 bare soil - 1/4
117	3.58	1.45	pasture	cultivated
118	1.12	0.45	residential (3 bldgs.)	residential (2 bldgs.)
119	7.91	3.20	cultivated	cultivated (2 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
120	8.49	3.44	cultivated	cultivated - 7/8 med. sized trees - 1/8
121	3.08	1.25	old field (brushy)	small trees
122	0.98	0.40	cultivated	grass (non- residential)
123	2.68	1.09	cultivated	cultivated - 1/2 grass (non- residential) - 1/2
124	1.25	0.51	med. sized trees	med. sized trees
125	5.32	2.15	pasture	pasture - 3/4 bare soil (power- line) - 1/4
126	13.90	5.63	cultivated	grass (non-residential)-1/2 bare soil (power- line) - 1/2
127	5.68	2.30	cultivated	grass (non- residential) - 1/2 bare soil (power- line) - 1/2
128	2.01	0.81	small trees	med. sized trees
129	206	0.83	small trees	med. sized trees
130	1.56	0.63	old field (brushy)	med. sized trees (1/3 on powerline)
131	0.85	0.34	old field (brushy)	med. sized trees (1/3 on powerline)
132	0.89	0.36	grass (non- residential)	med. sized trees - 1/2 bare soil & paved-1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
133	8.00	3.24	cultivated	residential (1 bldg.) - 3/4 old field (brushy) - 1/4
134	21.24	8.59	pasture	grass (non-residential) - 1/2 small trees - 1/2
135	4.07	1.65	old field (brushy)	small trees & brush
136	8.63	3.49	cultivated	residential (3 bldg.) - 3/4 grass (non-residential) - 1/4
137	3.89	1.57	old field (brushy)	med. sized trees - 1/2 paved road - 1/8 cultivated - 3/8 grass (non-residential) - 3/16
138	6.88	2.79	cultivated	cultivated - 1/2 residential (2 bldgs.) - 1/2
139	1.07	0.43	old field (brushy)	med. sized trees
140	8.18	3.31	old field (brushy)	med. sized trees - 9/10 grass (non-residential) 1/10
141	11.09	4.49	cultivated	residential (1 bldg) - 2/5 med. sized trees - 1/5 old field (brushy)-3/5
142	6.30	2.55	pasture (recently abandoned ?)	old field (brushy) - 1/2 med. sized trees - 1/4 residential (1 bldg.)-1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
143	1.79	0.72	cultivated	residential - 3/4 old field (brushy) - 1/4
144	6.66	2.70	cultivated	grass (non-residential) - 5/8 cultivated - 1/8 paved - 1/8 med. sized trees - 1/8
145	1.43	0.58	grass (non-residential)	med. sized trees
146	6.71	2.71	med. sized trees	large trees
147	1.43	0.58	small trees	small trees
148	2.24	0.90	residential	residential (1 bldg.) - 5/8 pasture - 3/8
149	1.88	0.76	cultivated	pasture - 7/8 pave road - 1/8
150	3.35	1.36	cultivated	residential (1 bldg) - 1/5 grass (non-residential)-4/5
151	3.53	1.43	cultivated	grass (non-residential)
152	11.04	4.47	pasture	pasture -3/4 cultivated -1/8 residential (1 bldg.) - 1/8
153	4.60	1.86	cultivated	cultivated
154	2.32	0.94	cultivated (pasture ?)	grass (non-residential)-2/3 residential (1 bldg.) - 1/6 med. sized trees - 1/6
155	2.46	1.00	old field (brushy)	small trees - 2/3 grass (non-residential)-1/3

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
156	5.45	2.21	cultivated	grass (non-residential) 1/2 under powerline
157	2.73	1.10	med. sized trees	med. sized trees
158	8.72	3.53	cultivated	cultivated - 7/8 bare soil - 1/8
159	9.57	3.87	cultivated	cultivated - 7/8 bare & paved - 1/8
160	9.61	3.89	cultivated (pasture ?)	grass (non-residential) - 2/3 bare (powerline)-1/6 residential- 1/6
161	4.25	1.72	small trees	old field (brushy) - 3/4
162	14.08	5.70	pasture	cultivated -2/3 small trees - 1/3
163	3.22	1.30	small trees	small trees
164	0.54	0.22	small trees	small trees
165	2.37	0.96	small trees & brush	small trees
166	3.76	1.52	small trees & brush	small trees
167	4.43	1.79	old field (brushy)	small trees
168	1.16	0.47	old field (brushy)	small trees
169	2.24	0.90	small trees & brush	small trees - 3/4 cultivated - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
170	7.29	2.95	cultivated	old field (brushy)-3/4 med. sized trees -1/4
171	6.53	2.64	cultivated	cultivated - 3/4 old field (brushy) - 1/4
172	0.36	0.14	cultivated	cultivated
173	1.39	0.56	cultivated	cultivated
174	0.94	0.38	cultivated	cultivated
175	1.52	0.62	residential	cultivated - 1/2 residential (2 bldg.) -1/2
176	2.41	0.98	old field (brushy)	med. sized trees -3/4 dump - 1/4
177	8.40	3.40	cultivated (1 bldg.)	pasture - 3/4 cultivated - 1/4
178	2.41	0.98	old field (brushy)	pasture
179	11.44	4.63	cultivated	old field (brushy) -3/4 commercial (kennel) - 1/4
180	1.25	0.51	old field (brushy)	old field (brushy)
181	10.46	4.23	cultivated	cultivated - 1/2 old field (brushy) - 1/2
182	1.48	0.60	residential (2 bldg.)	residential (2 bldg.)
183	7.24	2.93	cultivated	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
184	9.97	4.03	pasture (1 bldg.)	old field (brushy) - 3/4 residential (2 bldgs.) - 1/4
185	5.05	2.04	cultivated	pasture
186	1.97	0.80	cultivated	pasture
187	1.56	0.63	cultivated	cultivated
188	0.49	0.20	residential (2 bldgs.)	residential (1 bldg.)
189	7.96	3.22	pasture	cultivated - 3/4 med. sized trees - 1/8 residential (1 bldg.) - 1/8
190	4.07	1.65	pasture	old field (brushy)
191	5.41	2.19	cultivated	pasture
192	2.64	1.07	residential (3 bldgs.)	residential (3 bldgs.)
193	2.46	1.00	residential (1-2 bldgs.)	residential (3 bldgs.)
194	1.52	0.62	cultivated	cultivated - 3/4 med. sized trees - 1/4
195	3.98	1.61	old field (brushy)	cultivated - 1/4 med. sized trees - 3/4
196	9.57	3.87	cultivated	cultivated (1 bldg.)
197	1.43	0.58	cultivated	residential (1 bldg.)
198	1.56	0.63	residential (1 bldg.)	residential

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
199	3.58	1.45	cultivated	grass (non-residential) - 1/2 bare soil (1 bldg. under construction ?) - 1/2
200	8.36	3.38	old field (brushy)	small trees & brush
201	12.16	4.92	cultivated	cultivated - 7/8 med. sized trees - 1/8
202	1.39	0.56	cultivated	cultivated - 1/2 old field (brushy, 1 bldg.) - 1/3
203	4.02	1.63	cultivated	cultivated - 1/2 old field (brushy) - 1/2
204	4.52	1.83	grass (non-residential)	old field (brushy) - 1/4 small trees - 3/4
205	2.46	1.00	small trees	small trees
206	1.52	0.62	residential (1 bldg.) - 1/2 grass (non-residential) - 1/2	residential (1 bldg.) - 1/2 cultivated - 1/2
207	0.63	0.25	bare soil	residential (1 bldg.)
208	1.52	0.62	residential (1 bldg.)	residential (2 bldgs.) - 3/8 cultivated - 5/8
209	2.28	0.92	grass (non-residential)	cultivated - 3/4 med. sized trees - 1/4
210	1.48	0.60	residential (1 bldg.)	residential (1 bldg.) - 1/2 med. sized trees - 1/2
211	1.83	0.74	residential	residential - 1/4 med. sized trees - 3/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
212	1.03	0.42	residential ( 1 bldg.)	residential ( 1 bldg. )
213	0.94	0.38	cultivated	old field (brushy) - 2/3 med. sized trees -1/3
214	1.39	0.56	old field (brush & trees)	med. sized trees
215	1.88	0.76	residential (1-2 bldgs.)	residential (2 bldgs.)
216	13.19	5.34	cultivated (1 bldg.)	cultivated - 2/3 old field (brush, 1 bldg.) - 1/3
217	1.43	0.58	bare soil (parking lot)	commercial (parking lot)
218	2.37	0.96	med. sized trees	institutional (grass)
219	1.25	0.51	residential (1 bldg.)	residential ( 1 bldg.)
220	0.89	0.36	old field (brushy)	grass (non- residential) - 1/2 med. sized trees - 1/2
221	1.79	0.72	cultivated	residential (2 bldg.)
222	1.83	0.74	cultivated	old field (grass & brush) -2/3 small trees - 1/3
223	6.44	2.61	cultivated	cultivated -1/4 residential (1 bldg.) - 1/4 pasture - 1/2
224	2.41	0.98	cultivated	pasture

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
225	2.24	0.90	residential (1 bldg.)	residential (2 bldgs.)
226	1.16	0.47	residential (1 bldg.)	grass (non- residential) - 3/4 med. sized trees- 1/4
227	0.49	0.20	old field (brushy)	residential (grassy)
228	5.81	2.35	cultivated	residential (2 bldgs.)- 1/4 bare soil (powerline) - 1/4
229	6.26	2.53	old field (brushy)	bare soil (powerline)-3/16 old field (brush & trees) - 13/16
230	0.76	0.31	residential (1 bldg.)	residential (1 bldg.)
231	2.59	1.05	residential (1 bldg.)	residential (2 bldg.)
232	3.44	1.39	small trees	large trees
233	2.41	0.98	institutional (grass, trees & 1 bldg.)	institutional (grass, trees & 1 bldg.)
234	1.07	0.43	residential (1 bldg.)	residential (1 bldg.)
235	3.00	1.21	cultivated	old field (brushy)
236	1.39	0.56	old field (brushy)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
237	8.45	3.42	cultivated	old field (brushy)
238	9.43	3.82	cultivated	cultivated - 3/4 old field (brushy) - 1/8 residential (1 bldg.)
239	1.92	0.78	pasture	med. sized trees
240	6.97	2.82	pasture	old field (brushy)
241	1.88	0.76	cultivated	residential (2 bldgs.)
242	1.74	0.71	residential (3 bldgs.)	residential (6 bldgs.)
243	0.98	0.40	med. sized trees	med. sized trees
244	12.47	5.05	cultivated	cultivated
245	1.70	0.69	cultivated	med. sized trees - 1/3 grass (non- residential) - 2/3
246	7.33	2.97	cultivated	cultivated (1/4 under powerline)
247	4.20	1.70	cultivated	grass (non- residential)
248	5.81	2.35	cultivated	cultivated (1/2 under powerline)
249	1.43	0.58	cultivated	cultivated - 7/8 residential (1 bldg.) - 1/8
250	3.49	1.41	small trees	med. sized trees
251	1.56	0.63	cultivated	institutional (paved, grass)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
252	4.07	1.65	cultivated	institutional (paved, grass, 1 bldg.)
253	2.55	1.03	old field (brushy)	med. sized trees
254	5.19	2.10	cultivated	old field (brush & trees)
255	0.89	0.36	residential (1 bldg.)	grass (non- residential) -1/3 residential (1 bldg)-2/3
256	1.21	0.49	old field (weeds & brush)	old field (brush & trees)
257	0.54	0.22	small trees	med. sized trees
258	4.47	1.81	cultivated (1 bldg.)	old field (brushy)
259	4.65	1.88	cultivated	cultivated -3/8 residential (1 bldg.) -1/4 med. sized trees -1/4
260	2.59	1.05	small trees	med. sized trees -7/8 commercial (microwave station) - 1/8
261	0.45	0.18	commercial (microwave station)	med. sized trees
262	4.78	1.94	cultivated	grass (non- residential) -1/2 cultivated - 3/8 small trees -1/8
263	1.25	0.51	residential (1 bldg.)	residential (3 bldg.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
264	2.77	1.12	pasture	pasture
265	4.47	1.81	pasture - 2/3 cultivated - 1/3	bare (race track) - 1/4 pasture - 1/2
266	2.06	0.83	pasture	pasture
267	0.27	0.11	med. sized trees	pasture
268	0.31	0.13	med. sized trees	pasture
269	1.79	0.72	pasture	bare soil - 1/4 small trees - 3/4
270	2.68	1.09	cultivated - 1/2 grass (road fill)-1/2	paved (road)
271	2.77	1.12	large trees	grass (non- residential) few trees
272	4.29	1.74	cultivated	cultivated - 2/3 med. sized trees - 1/6 residential- 1/6
273	1.61	0.65	residential (grass, trees, 1 bldg.)	residential (1 bldg.)
274	0.85	0.34	residential (4 bldgs.)	residential (2 bldgs.)
275	1.11	0.45	fresh marsh or swamp	fresh marsh or swamp
276	1.48	0.60	old field (brushy)	small trees
277	1.03	0.42	cultivated	small trees
278	2.55	1.03	cultivated	cultivated - 2/3 residential (1 bldg.) - 1/3

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
279	4.56	1.85	small trees	med. sized trees
280	9.84	3.98	old field (brush & trees)	old field (brush & trees)
281	0.89	0.36	old field (brush & trees)	old field (brush & trees)
282	1.52	0.62	cultivated	grass (non-residential) - 1/2 paved - 1/2
283	0.94	0.38	cultivated	bare - 1/2 old field (brushy) - 1/2
284	0.36	0.14	residential (3 bldg.)	grass (barnyard, 2 bldg.)
285	9.79	3.96	cultivated	cultivated - 1/2 old field (brushy) - 3/8 residential (1 bldg.) - 1/8
286	0.58	0.24	small trees	med. sized trees

Table Summary of Land use Categories on South Branch of Muddy Creek and Lower Main Branch of Muddy Creek  
 (above weir only) Subwatersheds.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	64.32	26.03	11.1	48.67	19.70	8.4	15.66	6.34	-2.7	
Med. Sized Trees	49.31	19.96	8.5	265.68	107.52	46.0	216.37	87.56	+37.5	Due to extensive lumbering.
Large Trees	227.39	92.02	39.3	47.15	19.08	8.2	180.23	72.94	-31.1	
Cultivated	171.62	69.45	29.6	126.06	51.02	21.8	45.57	18.44	-7.8	
Pasture	13.43	5.43	2.3	12.05	4.88	2.1	1.38	0.56	-0.2	
Other Grass (non-residential)	4.84	1.96	0.8	3.88	1.57	0.7	0.96	0.39	-0.2	
Old Field (brushy)	18.46	7.47	3.2	32.80	13.27	5.7	14.35	5.81	+2.5	
Residential (under construction)	0	0	0	0.53	0.21	0.1	0.53	0.21	+0.1	
Residential (completed)	16.07	6.50	2.8	26.68	10.80	4.6	10.61	4.29	+1.8	
Bare	0.23	0.09	0.04	0.55	0.22	0.1	0.32	0.13	+0.1	
Dump	0	0	0	0.34	0.14	0.1	0.34	0.14	+0.1	

Table (Continued)

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Fresh Marsh and Swamp	13.34	5.40	2.3	13.34	5.40	2.3	0	0	0	
Total (sum of parts)	579.02	234.32	100.0	577.73	233.80	100.0	-	-	-	
Total (margin plani- meter)	577.20	233.59	-	577.20	233.59	-	-	-	-	
Error	-	-	0.3	-	-	0.1	-	-	-	

Buildings in 1957:26 (21 residential 5 farm)

Buildings in 1972:40 (37 residential 3 farm)

Table Summary of Land use Categories on Lower Main Branch of Muddy Creek (below weir only) Subwatershed.

Category	1957			1972			Change acres ha %	Notes
	acres	ha	%	acres	ha	%		
Small Trees	2.82	1.14	4.5	18.18	7.36	29.1	15.36	6.22 +24.6
Med. Sized Trees	0	0	0	1.33	0.54	2.1	1.33	0.54 + 2.1
Large Trees	24.17	9.78	38.7	24.17	9.78	38.7	0	0 0
Cultivated	9.48	3.84	15.2	8.52	3.45	13.6	0.96	0.39 - 1.5
Old Field (brushy)	20.94	8.47	33.5	5.21	2.11	8.3	15.73	6.37 -25.2
Fresh Marsh and Swamp	0.76	0.31	1.2	0.76	0.31	1.2	0	0 0
Salt Marsh	4.36	1.76	7.0	4.36	1.76	7.0	0	0 0
Total (sum of parts)	62.54	25.31	100.0	62.54	25.31	100.0	-	-
Total (margin planimeter)	63.34	25.63	-	63.34	25.63	-	-	-
Error	-	-	1.3	-	-	1.3	-	-

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Buildings in 1957: 1 (farm)

Buildings in 1972: 2 (farm)

Land use Map of:

- A. South Branch of the Main Branch of Muddy Creek and the Lower Main Branch of Muddy Creek (above the weir) Subwatersheds. (areas) through 13, 15, 22 through 32, 34 through 63, 65 through 106 and parts of areas 14, 16, 17 and 33).
- B. Main Branch of Muddy Creek (below the weir) Subwatershed. (areas 18 through 21, 64 and parts of areas 14, 16, 17, and 33).

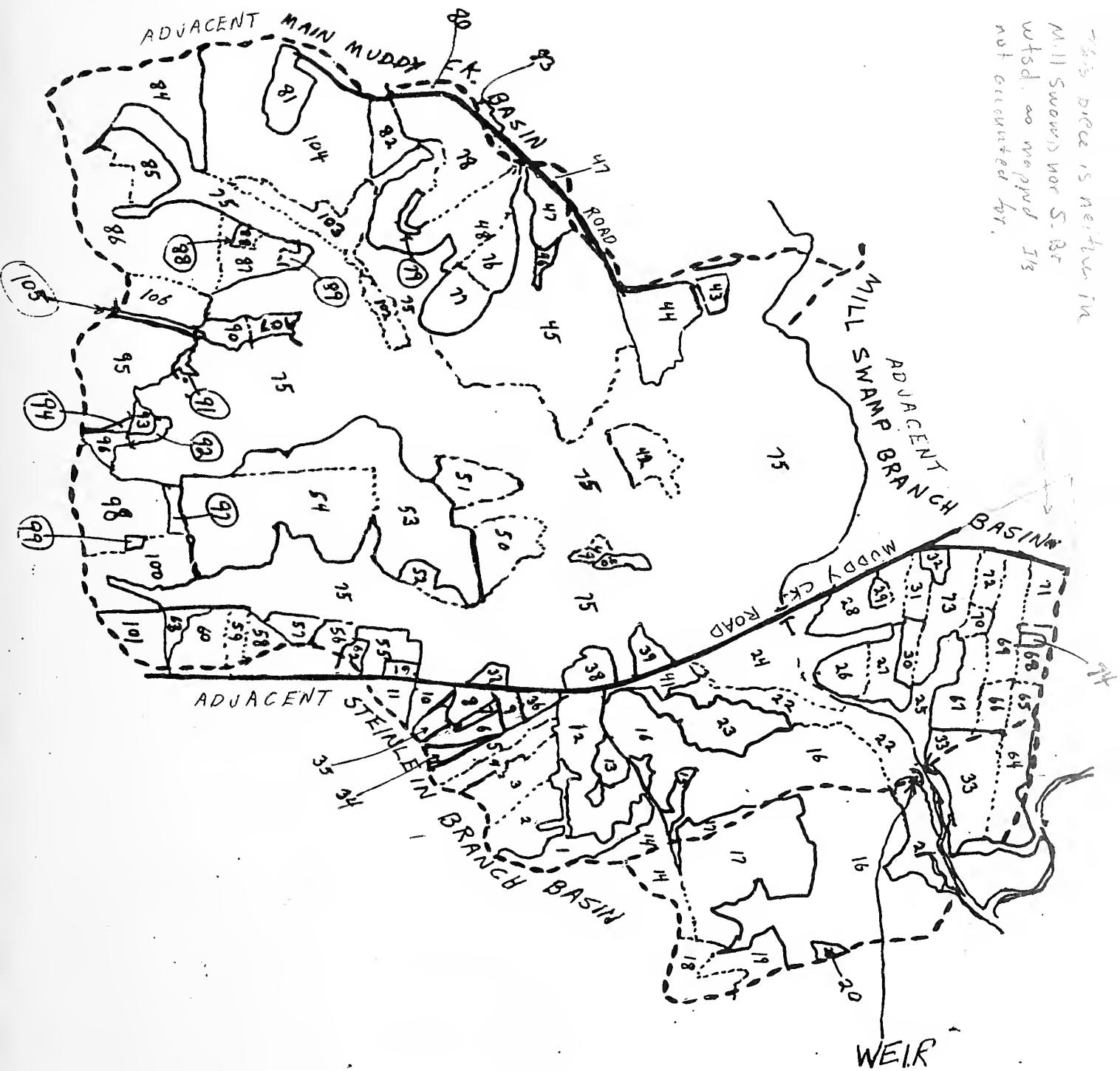


Table Details of Land use in Individual Areas on the South Branch of Muddy Creek and the Lower Portion of the Main Branch of Muddy Creek Subwatersheds.

Area No.	Area Size (area)	Area Size (ha)	Land use in:	
			1957	1972
1	4.49	1.82	med. sized trees	small trees
2	3.99	1.62	cultivated	old field (brushy) - 7/8 small trees - 1/8
3	4.18	1.69	cultivated	old field (brushy)
4	2.38	0.96	small trees	small trees - 3/4 med. sized trees - 1/4
5	2.65	1.07	cultivated	grass (non-residential) - 3/4 small trees - 1/4
6	1.53	0.62	old field (brushy)	old field (brushy) - 2/3 residential - 1/3
7	0.58	0.24	med. sized trees	residential (vacant)
8	1.44	0.58	residential (2 bldgs.)	residential (2 bldgs.)
9	1.03	0.42	residential (1 bldg.)	residential (1 bldg.)
10	2.25	0.91	old field (brushy) & trees	old field - 1/2 med. sized trees - 1/2
11	1.39	0.56	residential (2 bldgs., garden)	residential (1 bldg.)
12	8.36	3.38	old field & small trees (1 bldg.)	old field & small trees
13	1.75	0.71	large trees	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
**14	5.03	2.04	old field (brushy)	small trees & old field
15	1.03	0.42	old field (brushy)	med. sized trees
**16	44.92	18.18	large trees	large trees
**17	14.87	6.02	old field (brushy)	old field & small trees
**18	3.50	1.42	old field	old field - 1/4 small trees - 3/8 med. sized trees - 3/8
**19	2.83	1.15	small trees	small trees
**20	0.36	0.15	old field	small trees
**21	4.36	1.76	salt marsh	salt marsh
**22	8.18	3.31	fresh marsh & swamp	fresh marsh & swamp
23	5.93	2.40	fresh marsh & swamp	fresh marsh - 1/2 med. sized trees - 1/2
24	10.78	4.36	med. sized trees	med. sized trees
25	4.22	1.71	med. sized trees	med. sized trees
26	2.47	1.00	old field (brushy)	small trees
27	3.10	1.25	small trees	small trees
28	5.03	2.04	old field (brushy)	small trees
29	0.81	0.33	residential (1 bldg.)	residential (abandoned) - 1 bldg.

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
30	1.39	0.56	cultivated	cultivated - 1/2 residential (1 bldg.) - 1/2
31	1.62	0.65	old field (brushy) 1 bldg.	residential (wooded) 2 bldg.
32	0.90	0.36	residential (1 bldg.)	residential (1 bldg.)
**33	6.83	2.76	cultivated	cultivated ( 1 bldg.)
34	1.03	0.42	med. sized trees	med. sized trees
35	0.99	0.40	cultivated	grass (non-residential)
36	0.90	0.36	cultivated	old field (brushy)
37	0.63	0.25	residential (1 bldg.)	residential (2 bldg.)
38	2.07	0.84	residential (2 bldg., grass)	residential (4 bldg.)
39	1.48	0.60	cultivated	residential (2 bldg.)
40	0.76	0.31	old field (brushy)	small trees
41	1.71	0.69	grass (non-residential)	grass (non-residential)-1/2 old field (brushy) - 1/2
42	3.32	1.35	small trees	med. sized trees
43	1.17	0.47	pasture	cultivated
44	6.11	2.47	cultivated	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
45	27.04	10.94	med. sized trees (lumbered ?)	large trees
46	0.94	0.38	old field (brushy)	med. sized trees
47	3.64	1.48	cultivated	old field (brushy)
48	9.57	3.87	cultivated	cultivated - 7/8 small trees - 1/8
49	0.67	0.27	small trees	large trees
50	4.13	1.67	small trees	small trees
51	3.28	1.33	small trees	small trees
52	1.80	0.73	small trees	small trees
53	16.71	6.76	cultivated	cultivated
54	18.06	7.31	cultivated	cultivated
55	2.52	1.02	cultivated	residential (2 bldgs.) - 1/2
56	1.35	0.55	small trees (1 bldg.)	small trees - 3/4 dump - 1/4
57	1.48	0.60	cultivated	small trees - 3/4 residential (1 bldg.) - 1/4
58	1.30	0.53	residential (1 bldg.)	residential (1 bldg.)
59	1.30	0.53	cultivated	small trees
60	3.14	1.27	grass (non-residential)	small trees
61	0.67	0.27	residential (1 bldg.)	residential (2 bldgs.)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
62	0.40	0.16	residential (1 bldg.)	residential (2 bldg.) & dump
63	1.12	0.45	small trees	small trees
**64	3.82	1.55	cultivated	cultivated - 3/4 old field (brushy) - 1/4
65	1.39	0.56	cultivated	cultivated
66	1.80	0.73	small trees	old field (brushy)
67	3.95	1.60	cultivated	old field (brushy) - 1/4 med. sized trees - 3/4
68	1.93	0.78	cultivated	cultivated
69	4.58	1.85	cultivated	residential (2 bldgs., grass & trees)
70	1.03	0.42	residential (1 bldg.)	old field (brushy)
71	2.47	1.00	cultivated	med. sized trees
72	1.57	0.64	cultivated	residential (grassy)
73	4.85	1.96	cultivated	old field (brushy)
74	0.31	0.13	med. sized trees	bare soil (road)
75	204.93	82.93	large trees	large trees (thin canopy, many glades)
76	2.56	1.04	cultivated	cultivated - 1/8 old field (brushy)-7/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
77	3.68	1.49	cultivated	old field (brushy)
78	9.12	3.69	cultivated	cultivated
79	0.49	0.20	small trees	small trees
80	0.99	0.40	cultivated (1 bldg.)	cultivated (1 bldg.)
81	3.14	1.27	cultivated	pasture (recently abandoned ?)
82	2.74	1.11	cultivated	cultivated
83			Not in Rhode River Watershed.	
84	11.41	4.62	cultivated	cultivated
85	3.59	1.45	cultivated	cultivated
86	14.11	5.71	cultivated	cultivated
87	3.37	1.36	cultivated	cultivated
88	0.54	0.22	cultivated	old field (brushy)
89	0.63	0.25	cultivated	cultivated
90	1.35	0.55	residential (2-3 bldg.)	residential (4 bldg.)
91	0.22	0.10	residential (1 bldg.)	pasture - 2/3 bare (old bldg.site)-1/3
92	0.58	0.24	cultivated	cultivated
93	1.62	0.65	residential (1-2 bldg.)	residential (2 bldg.)
94	0.22	0.09	bare soil	bare soil (road)-2/3 grass (non-residential) - 1/3

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
95	8.76	3.55	pasture	pasture
96	1.21	0.49	residential (2 bldg.)	residential (3 bldg.)
97	0.76	0.31	cultivated	residential (under construction)-2/3 cultivated - 1/3
98	8.13	3.29	cultivated	cultivated
99	0.27	0.11	med. sized trees	med. sized trees
100	6.47	2.62	cultivated	cultivated
101	2.92	1.18	cultivated	cultivated
102	1.62	0.65	small trees	med. sized trees (over- grown powerline cut)
103	4.85	1.96	med. sized trees (lumbered)	med. sized trees
104	24.98	10.11	small trees	med. sized trees (thin canopy)
105	0.58	0.24	med. sized trees (along road)	med. sized trees (along road)
106	3.50	1.42	cultivated	cultivated
107	1.08	0.44	med. sized trees (orchard ?)	cultivated (1 bldg.)

\*\* Numbers 14 - 66.96%, 16 - 53.80%, 17 - 92.15%, 22 - 9.34%, 33 - 82.89%  
are all below the weir.

\*\* Numbers 18, 19, 20, 21, and 64 are all entirely below the weir.

Table Summary of Land use Categories on Steinlein Branch Subwatershed above Weir.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	0	0	0	10.47	4.24	2.8	10.47	4.24	+ 2.8	
Med. Sized Trees	16.55	6.70	4.5	15.72	6.36	4.2	0.83	0.34	- 0.2	
Large Trees	114.46	46.32	30.9	122.22	49.46	33.0	7.76	3.14	+ 2.1	
Cultivated	205.67	83.23	55.6	153.33	62.05	41.4	52.34	21.18	-14.2	
Pasture	15.40	6.23	4.2	23.94	6.69	6.5	8.54	3.46	+ 2.3	
Other Grass (non residential)	0.62	0.25	0.2	1.70	0.69	0.5	1.08	0.44	+ 0.3	
Old Field (brushy)	8.17	3.31	2.2	31.77	12.86	8.6	23.60	9.55	+ 6.4	
Residential (completed)	7.00	2.83	1.9	9.57	3.87	2.6	2.57	1.04	+ 0.7	
Paved	0	0	0	0.12	0.05	0.03	0.12	0.05	+ 0.03	Hwy. 468
Dump	0	0	0	0.50	0.20	0.1	0.50	0.20	+ 0.1	
Fresh Marsh	2.23	0.90	0.6	0.90	0.36	0.2	1.33	0.54	- 0.4	

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Table (Continued)

Category	1957			1972			Change acres %	Change ha %	Notes
	acres	ha	%	acres	ha	%			
Total (sum of parts)	370.11	149.78	100.0	370.25	149.84	100.0	-	-	-
Total (margin planimeter)	372.47	150.73	-	372.47	150.73	-	-	-	-
Error	-	-	0.6	-	-	0.6	-	-	-

Buildings in 1957: 7 (5 residential, 2 farm).

Buildings in 1972: 23 (16 residential, 7 farm).

Table Summary of Land use Categories on Steinlein Branch Subwatershed below Weir.

Category	1957			1972			Change acres ha %	Notes
	acres ha	%	acres ha	%	acres ha	%		
Small Trees	1.22	0.49	2.8	3.21	1.30	7.5	1.99	0.81 + 4.7
Med. Sized Trees	28.81	11.66	67.1	3.10	1.25	7.2	25.71	10.40 - 59.9
Large Trees	0	0	0	28.33	11.46	66.1	28.33	11.46 +66.1
Cultivated	6.80	2.75	15.8	0	0	0	6.80	2.75 -15.8
Old Field (brushy)	2.71	1.10	6.3	4.84	1.96	11.3	2.13	0.86 + 5.0
Fresh Marsh	1.03	0.42	2.4	1.03	0.42	2.4	0	0 0
Salt Marsh	2.36	0.96	5.5	2.36	0.96	5.5	0	0 0
Total (sum of parts)	42.93	17.37	100.0	42.88	17.35	100.0	-	-
Total (margin planimeter)	41.85	16.94	-	41.85	16.94	-	-	-
Error	-	-	2.5	-	-	2.4	-	-

No Buildings in 1957 or 1972

Table Summary of Land use Categories on the South Bank of Muddy Creek Estuary Subwatershed.

Category	1957			1972			Change			Notes
	acres	ha	%	acres	ha	%	acres	ha	%	
Small Trees	3.17	1.28	3.4	4.50	1	4.8	1.33	0.54	+ 1.4	
Med. Sized Trees	14.21	5.75	15.3	18.16	7.35	19.5	3.95	1.60	+ 4.2	
Large Trees	30.44	12.32	32.7	33.93	13.73	36.5	3.49	1.41	+ 3.7	
Cultivated	4.43	1.79	4.80	0	0	0	4.43	1.79	- 4.8	
Old Field (brushy)	17.86	7.23	19.2	13.38	5.41	14.4	4.48	1.81	- 4.8	
Salt Marsh	23.00	9.31	24.7	23.00	9.31	24.7	0	0	0	
Total (sum of parts)	93.16	37.70	100.0	92.98	37.63	100.0	-	-	-	
Total (margin planimeter)	92.70	37.51	-	92.70	37.51	-	-	-	-	
Error	-	-	0.4	-	-	0.3	-	-	-	

No buildings in 1957 or 1972

Land use Map of:

- A. Steinlein Branch (areas 1 through 70, 83 and part of 81).
- B. South Bank of Muddy Creek Estuary. (areas 71 through 80 and part of 81).

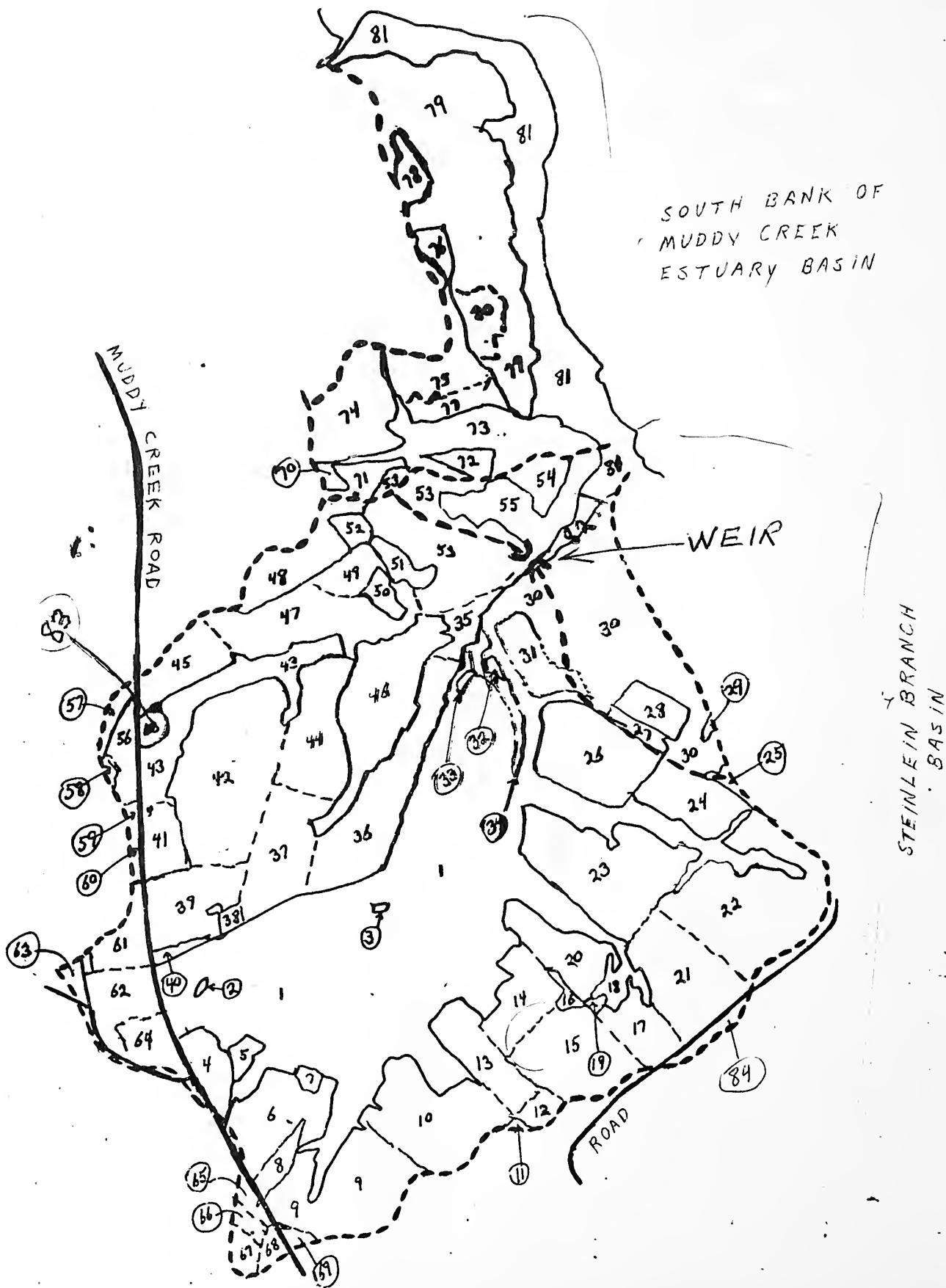


Table Details of Land use in Individual Areas on Steinlein Branch, and the South Shore of Muddy Creek Estuary Subwatershed.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	97.15	39.31	large trees	large trees - 99% cultivated - 1%
2	0.09	0.04	cultivated	cultivated
3	0.13	0.05	cultivated	cultivated
4	2.91	1.18	cultivated	cultivated - 3/4 med. sized trees - 1/4
5	0.89	0.36	residential (1 bldg.)	cultivated - 2/3 residential (3 bldg.) - 1/3
6	7.51	3.04	cultivated	cultivated
7	0.36	0.14	residential (1 bldg.)	cultivated (no bldg.)
8	1.70	0.69	cultivated	cultivated (contour)
9	15.24	6.17	cultivated	cultivated (contour)
10	10.91	4.41	cultivated	cultivated
11	0.36	0.14	cultivated	dump (or construction site ?)
12	1.48	0.60	cultivated	cultivated
13	4.92	1.99	cultivated	cultivated - 7/8 med. sized trees - 1/8
14	5.10	2.06	cultivated	cultivated
15	8.94	3.62	cultivated	cultivated med. sized trees (1 bldg.) - 1/8

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
16	0.54	0.22	med. sized trees	med. sized trees
17	3.89	1.57	cultivated	cultivated (contour) - 3/4 old field (brushy) - 1/4
18	1.88	0.76	med. sized trees	med. sized trees - 3/4 residential (1 bldg.) - 1/4
19	0.22	0.09	cultivated	cultivated
20	5.23	2.12	cultivated	cultivated (1 bldg)
21	9.61	3.89	cultivated	cultivated (contour) - 7/8 old field (brush, 1 bldg.) - 1/8
22	16.85	6.82	cultivated	cultivated (contour)-7/8 old field (brushy) - 1/4
23	13.99	5.66	cultivated	cultivated (2 bldgs.)
24	5.36	2.17	cultivated	cultivated - 7/8 med. sized trees - 1/8
25	0.63	0.25	residential (vacant)	residential (1 bldg.)
26	9.08	3.67	cultivated	cultivated old field (brushy) - 1/8
**27	1.21	0.49	small trees	med. sized trees
**28	2.73	1.10	ultivated	small trees
**29	0.22	0.09	cultivated	med. sized trees
**30	24.19	9.79	med. sized trees	large trees
**31	3.84	1.56	med. sized trees (pine)	small trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
32	0.18	0.07	fresh marsh	open water (marshy)
33	0.13	0.05	fresh marsh	fresh marsh
34	0.58	0.24	fresh marsh	fresh marsh
35	1.34	0.54	fresh marsh	cultivated - 1/2 old field (marshy ?) - 1/2
36	8.27	3.35	cultivated	cultivated
37	8.05	3.26	cultivated	cultivated
38	0.72	0.29	residential (2 bldg.)	residential (3 bldg.)
39	7.84	2.77	cultivated	pasture
40	0.63	0.25	grass (non- residential)	residential (1 bldg.)
41	3.13	1.27	old field (brushy)	grass (non- residential) - 1/4 small trees - 3/4
42	17.12	6.93	cultivated	cultivated (pasture ?)
43	8.72	3.53	med. sized trees	large trees
44	7.87	3.18	cultivated	cultivated
45	4.78	1.94	pasture (with trees along road)	small trees
46	11.85	4.79	large trees	large trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
47	10.64	4.31	pasture	old field (brushy, 1 bldg.) - 7/8 residential (1 bldg.) - 1/8
48	5.81	2.35	cultivated	old field (brush & small trees)
49	2.55	1.03	cultivated	residential (2 bldg.)
50	1.30	0.52	residential (vacant)	med. sized trees
51	1.83	0.74	med. sized trees	med. sized trees
52	1.07	0.43	residential (1 bldg.)	residential (1 bldg.)
**53	14.84	6.01	cultivated (contour)	old field (brushy) - 3/4 med. sized trees - 1/4
**54	2.64	1.07	old field (brushy)	old field (brushy) - 3/4 med. sized trees - 1/4
**55	8.05	3.26	med. sized trees	large trees
56	2.46	1.00	cultivated	cultivated
57	1.34	0.54	residential (trees)	med. sized trees - 3/4 residential (1 bldg.) - 1/4
58	0.45	0.18	residential	residential (1 bldg.) - 1/2 paved road - 1/4 grass (non- residential) - 1/4

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
59	0.80	0.33	cultivated	grass (non-residential) & trees
60	0.45	0.18	old field (brushy)	med. sized trees
61	3.49	1.41	cultivated	cultivated
62	4.60	1.86	old field (brushy)	med. sized trees - 1/3 cultivated - 2/3
63	1.16	0.47	cultivated	cultivated
64	3.58	1.45	cultivated	med. sized trees - 1/4 cultivated - 3/8 residential (1 bldg.) - 3/8
65	1.03	0.42	cultivated	old field (brushy) - 7/8 dump - 1/8
66	0.63	0.25	cultivated	cultivated
67	1.25	0.51	cultivated	cultivated (1 bldg.)
68	0.45	0.18	cultivated	cultivated
69	0.45	0.18	cultivated	cultivated - 3/4 med. sized trees - 1/4
70	0.54	0.22	med. sized trees	large trees
71	2.06	0.83	cultivated	old field (brush and trees)
72	1.74	0.71	cultivated	old field (brushy) - 1/2 small trees - 1/2

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
73	10.73	4.34	med. sized trees	med. sized trees
74	8.45	3.42	old field (brushy)	old field (brushy) - 2/3 med. sized trees - 1/3
75	5.81	2.35	old field (brushy)	old field med. sized trees - 1/4
76	1.97	0.80	old field (brushy)	small trees
77	3.17	1.28	small trees	med. sized trees
78	1.65	0.67	old field (brushy)	small trees
79	30.47	12.33	large trees	large trees (thinned)
80	2.95	1.19	med. sized trees (pine)	large trees
**81	25.39	10.28	salt marsh	salt marsh
**82	1.03	0.42	salt marsh ?	fresh marsh
83	0.98	0.40	cultivated - 1/2 med. sized trees - 1/4 residential (2 bldgs.) - 1/4	med. sized trees
84	1.65	0.67	large trees	large trees

\*\* Numbers 30 - 83.92%, 31 - 12.79%, 53 - 25.90% and 81 - 9.33% are below the weir

\*\* Numbers 27, 28, 29, 54, 55, 82 are entirely below the weir.

Table Summary of Land use Categories on Kirkpatrick Marsh.

Category	1957		1972		Change		Notes	
	acres	ha	acres	ha	acres	ha		
Small Trees	15.11	6.11	6.3	6.34	2.57	2.6	8.77	3.55 - 3.7
Med. Sized Trees	18.27	7.39	7.6	31.15	12.61	13.0	12.88	5.21 + 5.4
Large Trees	91.85	37.17	38.4	93.43	37.81	39.1	1.58	0.64 + 0.7
Cultivated	50.05	20.25	20.9	36.82	14.90	15.4	13.22	5.35 - 5.5
Other Grass (non residential)	3.35	1.36	1.4	0.94	0.38	0.4	2.41	0.98 - 1.0
Old Field (brushy)	1.93	0.78	0.8	9.41	3.81	3.9	7.48	3.03 + 3.1
Residential (completed)	0.37	0.15	0.2	2.85	1.15	1.2	2.48	1.00 + 1.0
Salt Marsh	58.08	23.50	24.3	58.1	23.51	24.3	0	0 0
Total (sum of parts)	238.38	96.47	100.0	239.03	96.73	100.0	-	-
Total (margin planimeter)	238.38	96.47	-	238.38	96.47	-	-	-
Error	-	-	0.2	-	-	0.3	-	-

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Buildings in 1957: 2 (1 residential, 1 farm).

Buildings in 1972: 5 (4 residential, 1 farm).

Table Summary of Land use Categories on Boathouse Creek Subwatershed.

Category	1957			1972			Change acres ha %	Notes
	acres	ha	%	acres	ha	%		
Small Trees	0.62	0.25	0.7	0	0	0	0.62	0.25 - 0.7
Med. Sized Trees	22.61	9.15	24.4	28.24	11.43	30.5	5.62	2.27 + 6.1
Large Trees	5.05	2.04	5.4	0	0	0	5.05	2.04 - 5.4
Cultivated	62.53	25.31	67.4	57.80	23.39	62.4	4.73	1.91 - 5.0
Old Field (brushy)	0	0	0	4.59	1.86	5.0	4.59	1.86 + 5.0
Residential (completed)	0.62	0.25	0.7	0.62	0.25	0.7	0	0 0
Salt Marsh	1.31	0.53	1.4	1.31	0.53	1.4	0	0 0
Total (sum of parts)	92.74	37.53	100.0	92.56	37.46	100.0	-	-
Total (margin plani- meter)	92.52	37.44	-	92.52	37.44	-	-	-
Error	-	-	0.2	-	-	0.05	-	-

652

Buildings in 1957: 2 (1 residential, 1 farm).

Buildings in 1972: 2 (1 residential, 1 farm).

Table Summary of Land use Categories on Ivy Neck Subwatershed.

Category	1957			1972			Change		Notes
	acres	ha	%	acres	ha	%	acres	ha	
Small Trees	1.65	0.67	1.2	0	0	0	1.65	0.67	- 1.2
Med. Sized Trees	19.56	7.92	14.0	27.62	11.18	19.7	8.06	3.26	+ 5.8
Large Trees	42.81	17.32	30.6	41.64	16.85	29.7	1.17	0.47	- 0.8
Cultivated	51.29	20.76	36.6	29.20	11.82	20.8	22.09	8.94	-15.8
Pasture	0	0	0	22.57	9.13	16.1	22.57	9.13	+16.1
Old Field (brushy)	6.08	2.46	4.3	0	0	0	6.08	2.46	- 4.3
Residential (completed)	2.02	0.82	1.4	3.19	1.29	2.3	1.17	0.47	+ 0.8
Open Water and Beach	1.42	0.57	1.0	1.72	0.70	1.2	0.30	0.12	+ 0.2
Salt Marsh	15.20	6.15	10.9	14.12	5.71	10.1	1.08	0.44	- 0.8
Total (sum of parts)	140.04	56.67	100.0	140.06	56.68	100.0	-	-	-
Total (margin planimeter)	142.49	57.66	-	142.49	57.66	-	-	-	-
Error	-	-	1.8	-	-	1.7	-	-	-
									653

Buildings in 1957: 3 (3 residential).

Buildings in 1972: 5 (4 residential, 1 farm).

Small Point marsh enlarged by 0.42 ha and Nixon's Nose by 0.084 ha. This was ignored in calculations of total areas.

Land use Map of:

- A. Kirkpatrick Marsh Subwatershed. (areas 85 through 110 and parts of areas 36 and 37).
- B. Boathouse Creek Subwatershed. (areas 32 through 43).
- C. Ivy Neck Subwatershed. (areas 2 through 31).

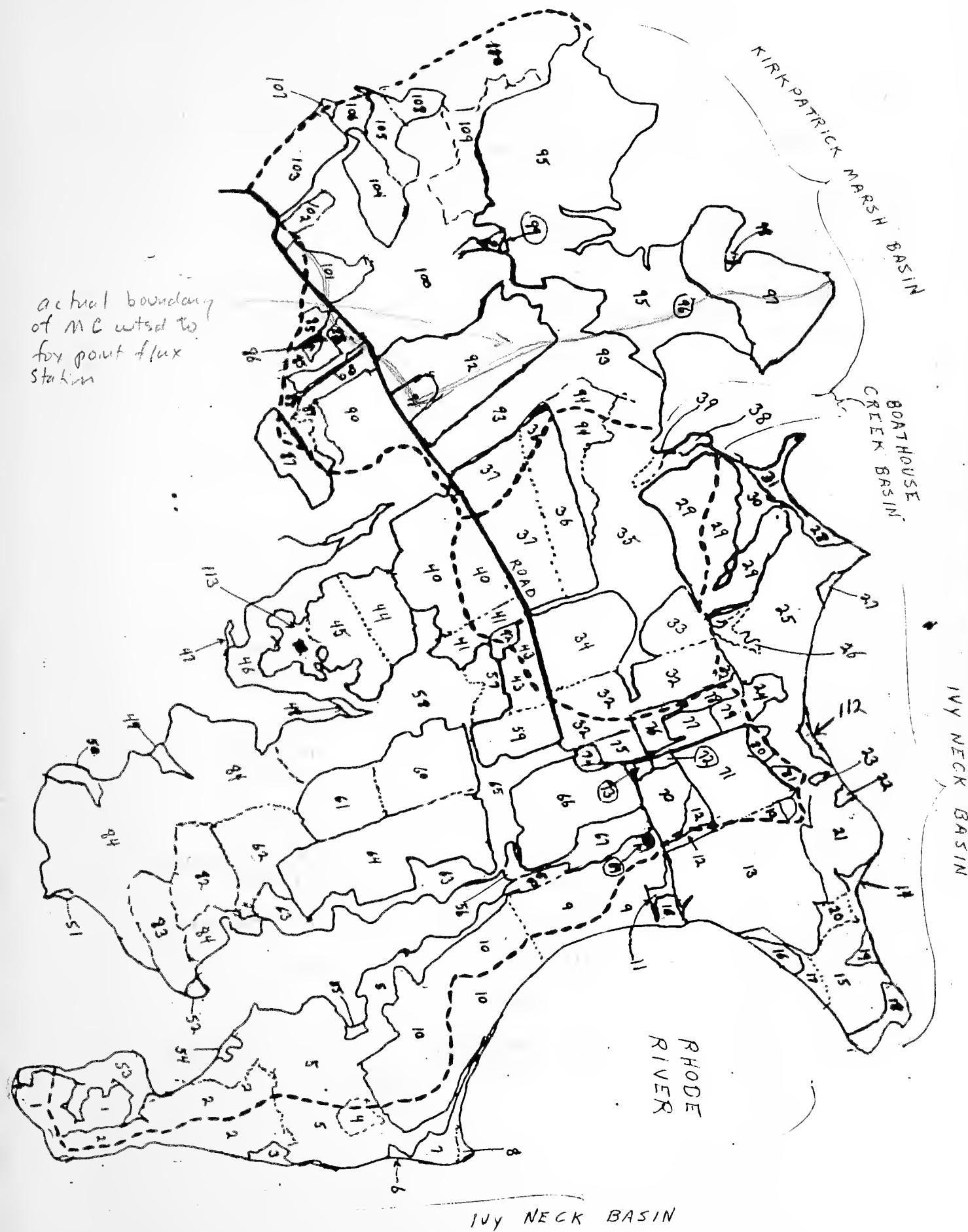


Table Details of Land use in Individual Areas on Kirkpatrick Marsh, Boathouse Creek, and Ivy Neck Subwatersheds.

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
1	1.97	0.80	large trees	large trees
2	7.60	3.08	large trees (pines)	large trees (pines)
3	0.76	0.31	beach (with pond)	beach (with pond)
4	1.30	0.52	old field (brushy)	med. sized trees
5	10.73	4.34	med. sized trees	med. sized trees
6	0.31	0.13	beach (with pond)	beach (with pond)
7	3.04	1.23	salt marsh	salt marsh ( now 1/3 larger)
8	0.36	0.14	beach	beach
9	6.57	2.66	cultivated	cultivated (1 bldg.)
10	11.09	4.49	cultivated	cultivated
11	0.94	0.38	old field (brushy)	med. sized trees - 1/2 cultivated - 1/2
12	0.80	0.33	med. sized trees	med. sized trees
13	22.58	9.14	cultivated	pasture
14	0.72	0.29	salt marsh	salt marsh
15	8.05	3.26	med. sized trees (thin canopy)	med. sized trees

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
16	1.16	0.47	salt marsh	salt marsh (with pond)
17	2.01	0.81	beach (with brush)	med. sized trees (marginal beach)
18	2.68	1.09	salt marsh	salt marsh
19	0.85	0.34	salt marsh	salt marsh
20	1.65	0.67	small trees	med. sized trees
21	9.34	3.78	large trees	large trees - 7/8 residential (1 bldg.) - 1/8
22	0.31	0.13	salt marsh	salt marsh
23	0.22	0.09	residential (1 bldg.)	residential (1 bldg.)
24	1.79	0.72	residential (2 bldgs.)	residential (1 bldg., grass)
25	20.90	8.46	large trees	large trees (1 bldg.)
26	1.83	0.74	old field (brushy)	med. sized trees
27	0.54	0.22	salt marsh	salt marsh (and beach)
28	1.34	0.54	salt marsh	salt marsh
29	19.36	7.83	cultivated	cultivated
30	3.04	1.23	large trees	large trees
31	2.01	0.81	salt marsh	salt marsh (10% larger by deposition)
32	10.06	4.07	cultivated	cultivated
33	4.60	1.86	cultivated	old field (brushy)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
34	11.00	4.45	cultivated	cultivated
35	22.58	9.14	med. sized trees	med. sized trees
36	10.42	4.22	cultivated	cultivated
37	13.81	5.59	cultivated	cultivated
38	0.63	0.25	salt marsh	salt marsh
39	0.67	0.27	salt marsh	salt marsh
40	6.53	2.64	cultivated	cultivated
41	1.79	0.72	cultivated	cultivated
42	0.63	0.25	residential (2 bldgs.)	residential (2 bldgs., 1 house, and 1 barn)
43	2.10	0.85	cultivated	cultivated
76	0.63	0.25	small trees	med. sized trees
78	0.45	0.18	old field (brushy)	med. sized trees (some brush)
80	0.09	0.04	residential (1 bldg.)	residential (grass)
85	4.29	1.74	cultivated (1 bldg.)	cultivated (1 bldg.)
86	0.27	0.11	cultivated (garden)	residential (1 bldg.)
87	0.85	0.34	cultivated	old field (brushy)

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
88	3.71	1.50	med. sized trees	grass (non-residential) - 1/4 med. sized trees - 3/4
89	5.28	2.13	small trees	med. sized trees
90	9.84	3.98	small trees	med. sized trees
91	2.10	0.85	med. sized trees	small trees
92	18.55	7.51	cultivated	cultivated - 7/8 small trees - 1/8
93	17.88	7.24	large trees	large trees - 3/4 (cut by road) med. sized trees - 1/4
94	7.33	2.97	med. sized trees (pine ?)	med. sized trees
95	57.40	23.23	salt marsh	salt marsh (now slightly larger by deposition)
96	0.45	0.18	med. sized trees	med. sized trees
97	17.61	7.13	large trees	large trees - 7/8 residential (2 bldgs.) - 1/8
98	0.09	0.04	salt marsh	salt marsh
99	0.63	0.25	fresh marsh	fresh marsh
100	37.24	15.07	large trees	large trees
101	3.35	1.36	old field (brushy)	med. sized trees
102	1.74	0.71	cultivated	cultivated
103	7.69	3.11	cultivated	cultivated

Table (continued)

Area No.	Area Size (acres)	Area Size (ha)	Land use in:	
			1957	1972
104	5.99	2.42	cultivated	old field (brushy)
105	3.84	1.56	cultivated	old field (brushy) - 2/3 med. sized trees - 1/3
106	1.61	0.65	med. sized trees	large trees
107	0.36	0.14	residential (1 bldg.)	residential (1 bldg.)
108	1.92	0.78	old field (brushy)	small trees
109	8.14	3.29	med. sized trees (lumbered)	large trees
110	13.23	5.36	large trees	large trees
111	1.43	0.58	salt marsh	salt marsh - 3/4 med sized trees - 1/4
112	0.72	0.29	salt marsh	open water - 3/4 med. sized trees - 1/4
113	3.98	1.61	old field (brush & small trees)	small trees

Total Coliform and Fecal Coliform Bacteria in Water Samples

Surface Water Stations (maps 2 and 3)

Technique - Bacteria were enumerated using the multiple tube dilution technique and the elevated temperature test respectively, according to the (American Public Health Association, 1971. "Standard Methods for the Examination of Water and Waste Water". 13th ed. APHA, N. Y.). Total coliform and fecal coliform numbers were expressed as most probable numbers per 100 ml (MPN/100ml).

Principal Investigator: Maria A. Faust, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

## Surface Water Samples

Table Seasonal Distribution Of Coliform Bacteria In The Muddy Creek  
Stations

<u>Day of 1973</u>	5	6	8	1	3
<u>Total Coliform Bacteria:</u> MPN/100ml					
178	2400	2400	2400	-	-
208	2400	2400	2400	-	-
232	1600	1600	1600	-	-
262	540	540	920	-	-
288	1600	920	350	-	-
323	130	79	33	-	-
347	2400	130	350	540	1700
<u>Fecal Coliform Bacteria:</u>					
178	2400	2400	1600	-	-
208	2400	2400	1600	-	-
232	1600	1600	1600	-	-
262	540	540	540	-	-
288	540	350	240	-	-
323	17	27	0	-	-
347	79	22	70	17	5

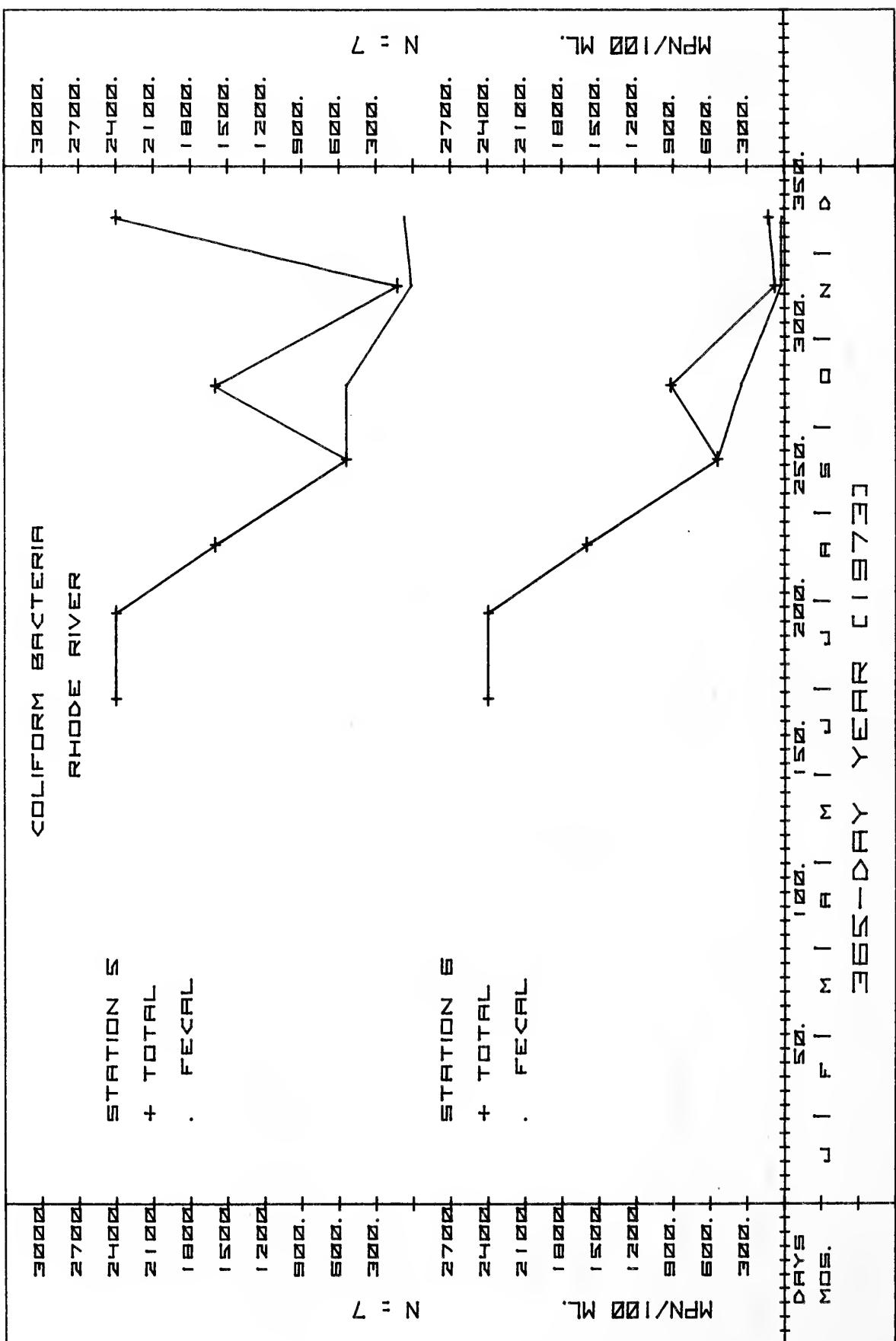
## Surface Water Samples

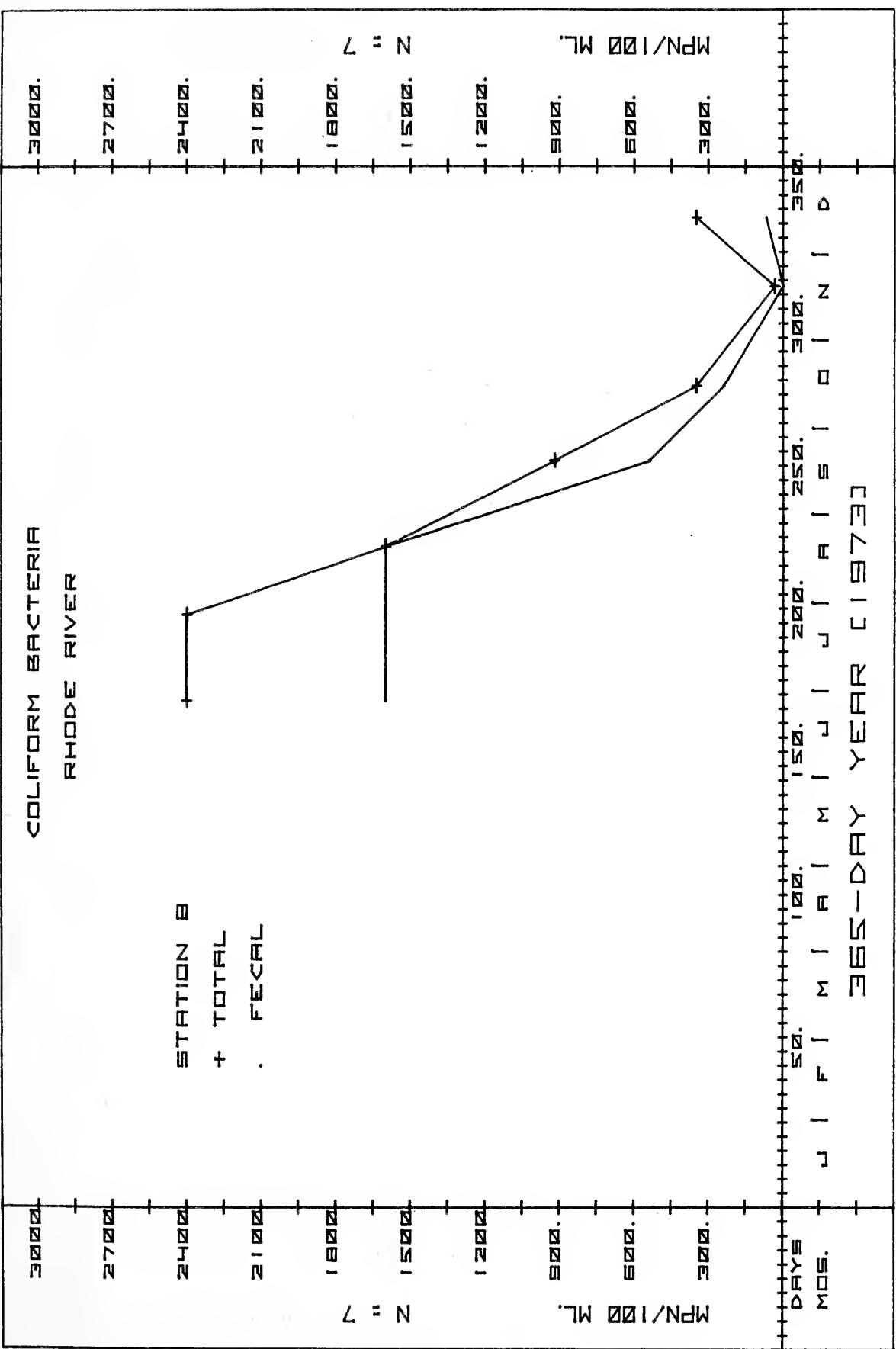
Table

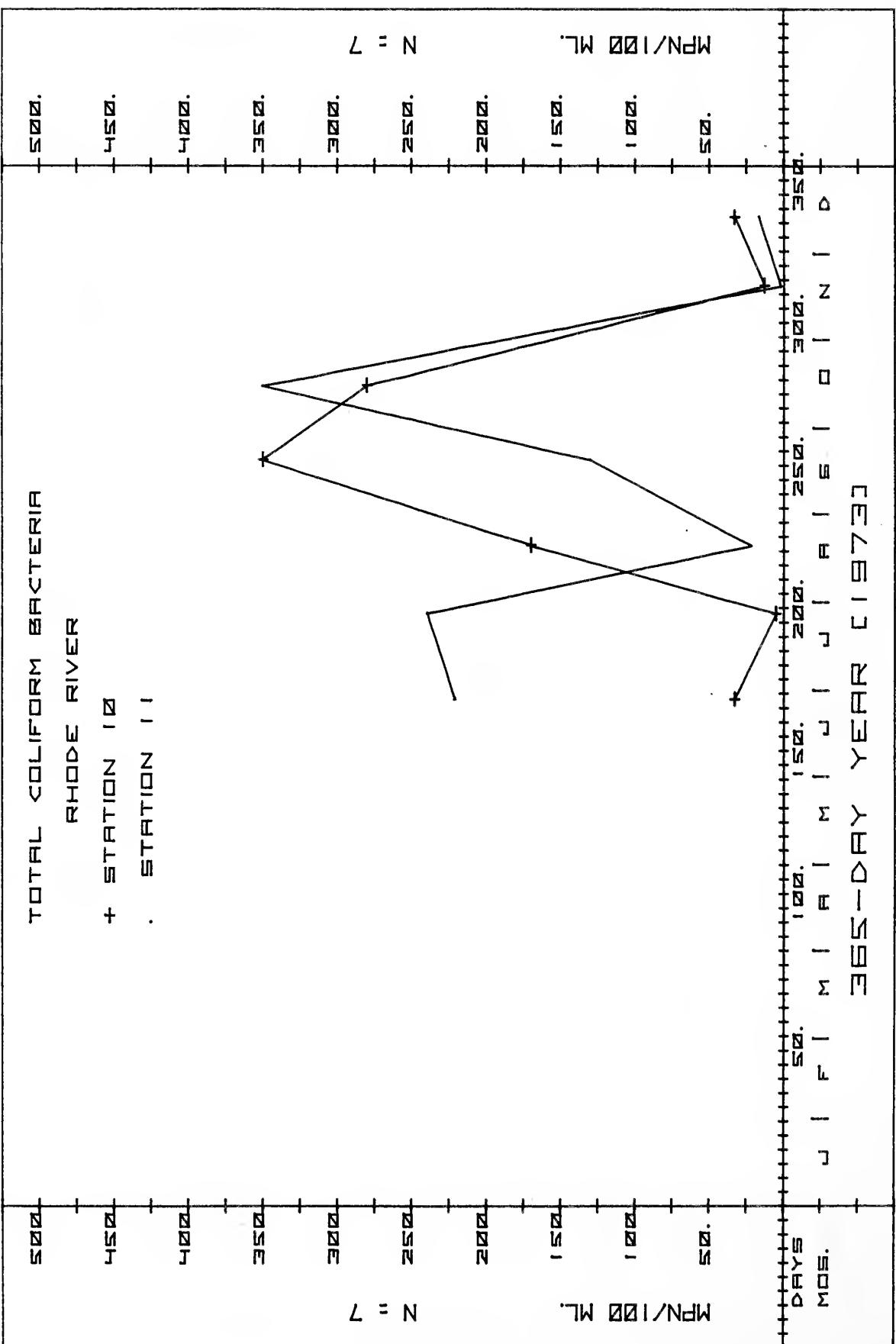
## Seasonal Distribution Of Coliform Bacteria In Rhode River

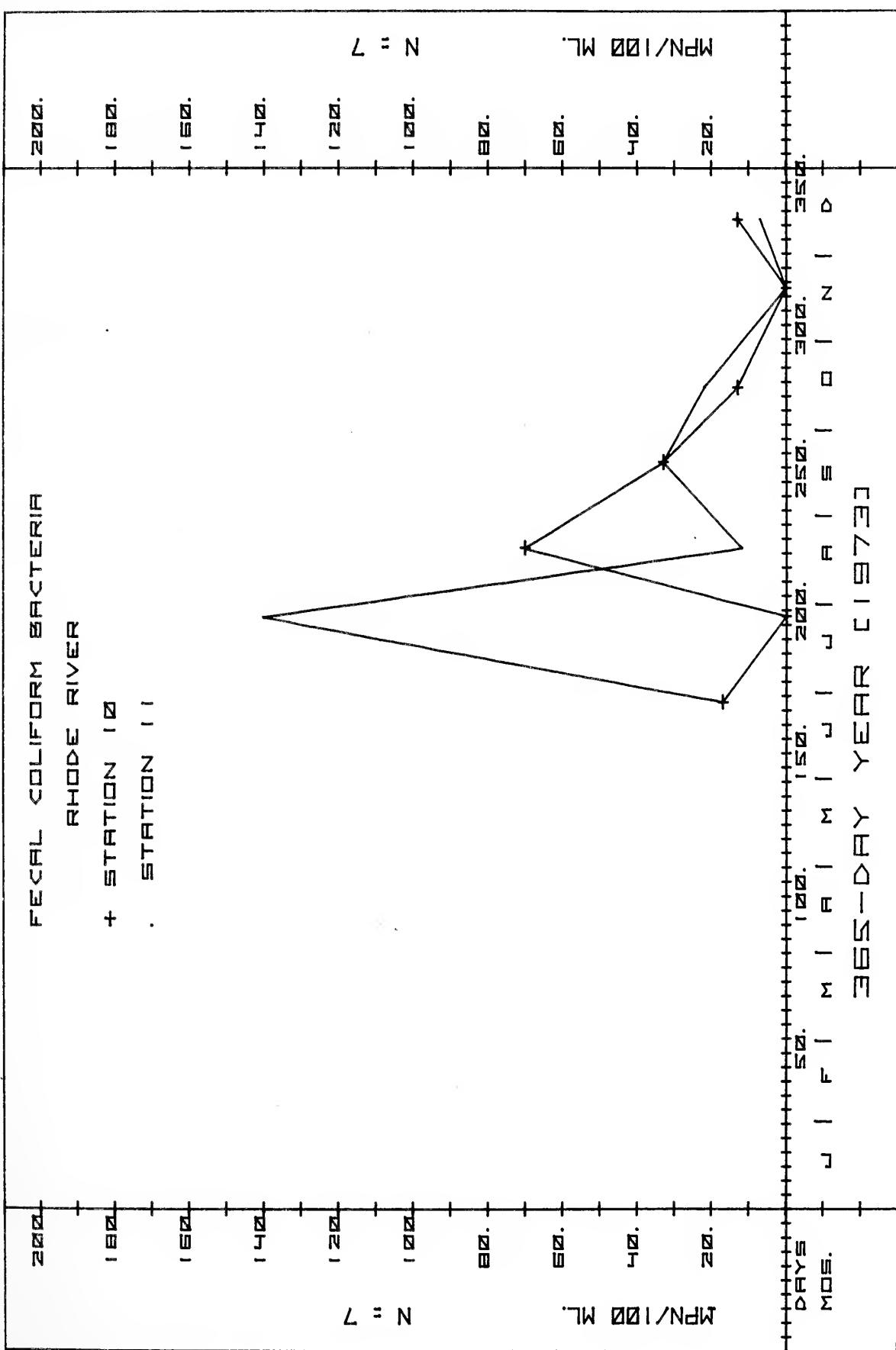
## Stations

Day of 1973	9	10	11	12	12.5	S.E. Shore Km. 1.8	Selman Cr. Km. 1.6	Selman Cr. Km. 1.0
<b>Total Coliform Bacteria:</b>								
MPN/100ml								
178	-	33	221	-	-	-	-	-
208	-	5	240	-	-	-	-	-
232	-	170	22	-	-	-	-	-
262	-	350	130	-	-	-	-	-
288	-	280	350	49	13	49	-	-
323	-	13	2	8	0	8	-	-
347	110	33	17	11	-	-	350	13
<b>Fecal Coliform Bacteria:</b>								
178	-	17	17	-	-	-	-	-
208	-	0	140	-	-	-	-	-
232	-	70	12	-	-	-	-	-
262	-	33	33	-	-	-	-	-
288	-	13	22	-	13	5	8	-
323	-	0	0	-	0	0	0	-
347	-	13	7	4	-	-	130	13









### Bacterial Populations in Rhode River, 1973

Technique: Total viable bacterial cells in the surface water and sediments were determined by plating appropriate dilutions of the samples in triplicate on several media, incubation at 15° C for one week, and colony enumeration. Selection is for aerobic bacteria only.

Coliform bacteria were enumerated using the multiple tube dilution technique and the elevated temperature test according to the American Public Health Association, 1971. "Standard Methods for the Examination of Water and Waste Water". 13th Ed. APHA, N.Y.

Principal Investigator: Rita R. Colwell, Department Microbiology, University of Maryland, College Park, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Bacterial Populations in Rhode River - 1973

Day of Year	Total Viable cells/ml			Total Viable cells/ml		
	RR Km 0.0	RR Km 3.4	Water	RR Km 0.0	RR Km 3.4	Bottom Sediment Slurry
193	--	$8 \times 10^2$ to $3 \times 10^3$	--	$3.8 \times 10^2$	--	--
249	$6.6 \times 10^2$	$6.6 \times 10^3$	--	$1.0 \times 10^4$	$1.3 \times 10^4$	--
285	$4.8 \times 10^2$	$7.0 \times 10^2$	--	$1.7 \times 10^3$	$1.3 \times 10^3$	$3.1 \times 10^4$
318	$5.2 \times 10^2$	$4.3 \times 10^2$	--	$2.1 \times 10^4$	$1.4 \times 10^3$	$4.7 \times 10^5$
344	$4.9 \times 10^2$	$1.9 \times 10^2$	--	$9.4 \times 10^4$	$1.6 \times 10^3$	$1.7 \times 10^6$

Table Coliform Bacterial Populations in Rhode River - 1973

Day of Year	RR Km 0.0	RR Km 3.4	Surface Water	Most Probable Number of Total Coliform Bacteria/100 ml				RR Km 0.0	RR Km 3.4	Bottom Sediments
				RR Km 5.4	CC Km 0.66	RR Km 0.0	RR Km 3.4			
193	17	17	--	240	--	--	--	--	--	--
249	4	17	920	540	--	--	--	--	--	--
285	17	11	240	22	--	--	--	--	--	--
318	0	70	11	220	--	--	--	--	--	--
344	17	79	(over) 2,400	540	140	140	140	260	260	170

Day of Year	RR Km 0.0	RR Km 3.4	Surface Water	Most Probable Number of Fecal Coliform Bacteria /100ml				RR Km 0.0	RR Km 3.4	Bottom Sediments
				RR Km 5.4	CC Km 0.66	RR Km 0.0	RR Km 3.4			
193	8	8	--	7	--	--	--	--	--	--
249	2	2	46	17	--	--	--	--	--	--
285	17	5	(over) 2,400	33	17	--	--	--	--	--
344	0	22	130	0	70	260	0	260	0	0

Heterotrophic Bacteria and Coliform Bacteria.

Technique: Viable heterotrophic cell counts were determined from plate counts using agar medium which contained per liter; 0.18g KC1, 1.75g MgSO<sub>4</sub> 7 H<sub>2</sub>O, 5.8g NaCl, 3.0g Difco yeast extract, 10g Difco proteose peptone at pH. 7.2-7.4. Salinity of the medium was about 8%. Most probable numbers of coliform and fecal coliform cells were determined with replicate, 5 tube dilution series according to the method in Standard Methods for Examination of Water and Waste Water 12th Ed. (1965), American Public Health Assoc., New York.

Principal Investigator: Eugene B. Small, Zoology Department, University of Maryland, College Park, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Bacterial and Coliform Bacterial Levels in Rhode River.

672

Day of Year	Depth (feet)	Total Coliformes/100ml			Fecal Coliformes 95% Confidence Limits	Heterotrophs (No./ml) Mean	Total
		Lower	Upper	Mean			
<u>Station 10, 1973</u>							
193	1.0	7	-	63	21	2-25	11
302	1.0	--	--	<b>≥2400</b>	--	<b>≥2400</b>	<b>4.0 × 10<sup>3</sup></b>
302	3.5	120	-	1000	348	35-300	130
302	6.0	68	-	750	240	35-300	130
<u>Station 9, Map 2</u>							
304	2.0	180	-	1400	542	43-490	172
<u>200 Meters South from RR Km 3.2</u>							
190	1.0	5	-	70	20	-0-	-0-
190	3.5	5	-	70	17	1 - 19	8
200	3.5	43	-	490	172	25 - 190	79

Table (Continued)

Day of Year	Depth (feet)	Total Coliforms/100ml	Fecal Coliforms	Total
		95% Confidence Limits	95% Confidence Limits	Heterotrophs (No./ml)
		Lower - Upper	Mean	Mean
<u>Sellman Creek</u>				
191	1.0	28 - 219	94	1-17 7
193	1.0	28 - 219	94	1-17 7
200	3.5	300 - 3,200	918	57-700 221
<u>Cadle Creek (Km 0.5)</u>				
192	1.0	43 - 486	172	17-126 49
200	3.5	180 - 1,400	542	23-170 70
303	1.0	1,800 - 14,000	5,420	680-7,500 2,400
303	3.5	1,200 - 10,000	3,480	120-1,000 348
303	6.0	1,200 10,000-3,480	37- 340	37- 340 141

## Estimation of Bacterial Populations

Station - 200 Meters South from Rhode River Km. 3.20

Technique - Quantitative determination of bacteria in water was estimated by direct microscopic count. Biomass was calculated from the data obtained by direct counts of distinct morphological groups such as rods and cocci, with cell shape and size as identifying features. Methods used are described in Rodina, A. G. 1972. "Methods in Aquatic Microbiology". eds. Colwell, R. R., and Zamburski, M. S. University Park Press, Baltimore, Maryland.

Principal Investigator: Maria A. Faust, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Classification Of Bacterial Sizes Used In Biomass Determinations  
(1973)

Bacterium	Size Class	Dimensions ( $\mu\text{m}$ )	Volume $\mu\text{m}^3/\text{cell}$
Width			
<u>Cocci</u>			
	1	0.5 - 0.75	0.130
	2	1.0	0.523
	3	1.5 - 2.0	2.803
Width x Length			
<u>Rods</u>			
	4	0.5 x 1.0 - 2.0	0.294
	5	0.5 x 2.5 - 7.5	0.981
	6	0.5 x 7.5 - 10.0	1.717
	7	1.0 x 2.0 - 7.5	4.403
	8	1.0 x 100	78.500
	9	2.0 x 3.0 - 5.0	12.560

Table Number Of Bacteria In Various Size Classes In Rhode River 200 Meters South Of  
 Rhode River Km. 3.20. Depth - One Meter.

Day of 1973	Size Classes *cells x 10 <sup>4</sup> /ml								
	Cocci				Rods				
	[1]	2	3]	[4]	5	6	7	8	9]
87	9.7	8.1	0.8	8.5	26.7	0	0	0	0
137	0	980.0	0	110.0	0	670.0	0	0	0
165	0	12.8	39.4	0	0	0	46.0	0	0
190	100.0	710.0	10.0	0	0	6.0	2.0	0	0
219	0	400.0	0	245.0	0	100.0	26.0	0	5.0
249	110.0	112.0	0	0	3.6	15.3	7.8	1.4	0
304	0	120.0	0	150.0	0	0	22.0	0	0
330	0	51.3	0	98.4	103.2	47.0	10.0	0	0
352	0	11.3	0	49.1	80.6	19.1	0	0	0

\* Size Classes Described On Table 1

Table Contribution Of Each Size Class Of Bacteria To The Total Volume Of Bacterial Biomass  
 In Rhode River 200 Meters South Of Rhode River Km. 3.20. Depth - One Meter.

Day of 1973	Size Classes *mm <sup>3</sup> /L									677
	Cocci				Rods					
	[1]	2	3]	[4]	5	6	7	8	[9]	
87	0.012	0.042	0.022	0.025	0.261	0	0	0	0	0
137	0	5.125	0	0.323	0	11.503	0	0	0	0
165	0	0.066	1.104	0	0	0	2.025	0	0	0
190	0.135	3.713	0.028	0	0	0.103	0.095	0	0	0
219	0	2.092	0	0.720	0	1.717	1.144	0	0	0.628
249	0.143	0.585	0	0	0.035	0.262	0.343	1.099	0	
304	0	0.627	0	0.441	0	0	0.968	0	0	0
330	0	0.268	0	0.289	1.010	0.807	0	0	0	0
352	0	0.059	0	0.327	0.790	0.144	0	0	0	0

\* Size Classes Described On Table 1

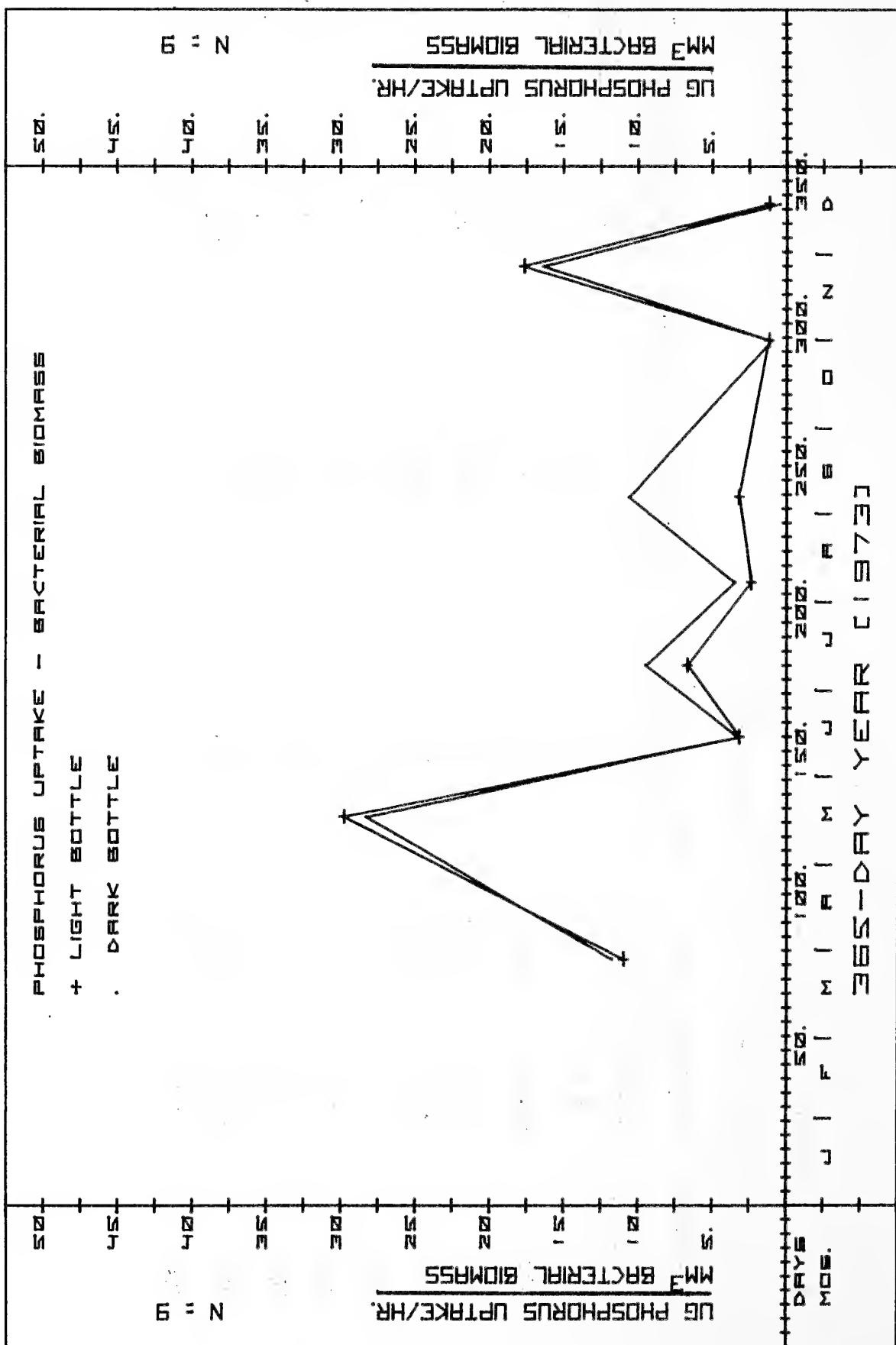
Table Contribution Of Each Size Class Of Bacteria To The Total Bacterial Biomass In Rhode River  
 200 Meters South Of Rhode River Km. 3.20. Depth - One Meter.

Day of 1973		Size Classes *% Of Total Biomass							
		[1]	2	3]	[4]	5	6	7	8
Cocci									
87	3.2	11.6	6.0	6.9	72.4	0	0	0	0
137	0	30.2	0	1.9	0	67.8	0	0	0
165	0	2.1	34.6	0	0	0	63.3	0	0
190	3.2	91.2	0.7	0	0	2.5	2.3	0	0
219	0	32.2	0	11.4	0	27.2	18.1	0	10.0
249	5.8	23.8	0	0	1.4	10.6	13.9	44.6	0
304	0	30.9	0	21.7	0	0	47.7	0	0
330	0	11.3	0	12.2	42.6	34.0	0	0	0
352	0	4.5	0	24.8	59.8	10.9	0	0	0

\* Size Classes Described On Table.

Table Relationship between Phosphorus Uptake and Bacterial Biomass in Rhode River 200 Meters South of Rhode River Km. 3.20 at a Depth of One Meter.

Day of 1973	Phosphorus Uptake (ug/hr/L)		Bacterial Biomass (mm <sup>3</sup> /L)	Contribution of Bacteria to Total Biomass (%)	ug P-Uptake/hr. mm <sup>3</sup> Bacterial Biomass	
	Light	Dark			Light	Dark
87	4.4	4.7	0.4	20.0	11.0	11.8
137	504.0	478.7	16.9	2.5	29.8	28.3
165	10.2	10.5	3.2	65.3	3.2	3.3
190	27.6	39.0	4.1	20.6	6.7	9.5
219	14.9	22.1	6.3	70.0	2.4	3.5
249	7.9	26.5	2.5	73.5	3.2	10.6
304	2.5	2.1	2.0	68.9	1.2	1.0
330	42.4	39.3	2.4	47.0	17.7	16.4
352	1.6	0.6	1.3	23.2	1.2	0.5
					679	



Estimation of Phytoplankton Populations

Station - 200 Meters South from Rhode River Km. 3.20

Technique - Quantitative determination of Phytoplankton in water were estimated by direct microscopic counts. Biomass was calculated from data obtained by direct counts of distinct algal classes using taxonomical features established in algal classification. Procedure described in Campbell, P. H. 1973. "Studies on Brackish Water Phytoplankton".

Ph. D. Thesis, University of North Carolina, Chapel Hill, North Carolina.

Principal Investigator: Maria A. Faust, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Total Cell Numbers Of Various Algal Classes And Their Seasonal Occurrence In Rhode River  
 Sampling Station - 200 Meters South Of Rhode River Km. 3.20. Depth - One Meter

Day of 1973

Algal Class	(um)	37	137	165	190	219	249	304	330	352
		cell s/ml								
<u>Dinophyceae</u>										
Prorocentrum minimum	18 x 16	-	200,000	88	1800	-	10	2	20	132
Gymnodinium sp.	18 x 16	-	-	38	-	-	-	-	-	-
G. nelsonii	70 x 50	-	-	6	3100	-	-	-	-	-
Gymnodinium sp.	15 x 12	-	-	316	-	-	60	-	-	-
G. punctatum	12 x 5	-	-	128	2400	450	226	118	-	64
G. splendens	60 x 50	-	-	-	1200	14	-	-	-	-
G. album	20 x 10	-	-	-	-	34	2	-	-	-
G. subroseum	17 x 15	-	-	-	-	-	-	-	-	16
Gyrodinium estuariale	12 x 10	-	-	46	-	226	98	88	-	106
G. auranticum	12 x 7	-	-	-	-	-	12	-	-	-
G. carteretenses	23 x 13	-	-	-	-	-	-	46	2	44

682

Table (continued)

Day of 1973

Algal Class	(um)	87	137	165	190	219	249	304	330	352
cells/ml										
<i>G. metum</i>	17 x 12	-	-	-	-	-	-	-	-	34
<i>Gyrodinium</i> sp.	26 x 20	-	-	-	-	-	-	4	-	-
<i>Glenodinium danicum</i>	25 x 20	-	-	12	-	-	72	-	14	-
<i>G. occultatum</i>	20 x 23	-	-	-	-	-	-	22	-	-
<i>G. rotundum</i>	20 x 20	-	-	-	-	-	-	-	-	52
<i>Peridinium brevipes</i>	25 x 20	-	-	28	-	12	-	-	-	104
<i>Peridinium</i> sp.	17 x 13	-	-	28	-	12	-	-	-	-
<i>Peridinium</i> sp.	70 x 60	-	-	-	170	-	-	-	-	-
<i>Amphidinium</i> sp.	15 x 10	-	-	12	-	-	-	-	-	90
<i>A. globosum</i>	10 x 5	-	-	-	6200	-	44	-	-	-
<i>A. fusiform</i>	10 x 8	-	-	-	-	202	-	-	-	-
<i>Amphidinium</i> sp.	20 x 10	-	-	-	-	-	-	22	-	-
<i>Katodinium rotundum</i>	10 x 6	-	-	-	-	-	-	10	104	-
Total	200,000	702	14,870	950	534	408	140	682		

683

Table (continued)

Day of 1973

Algal Class	(um)	87	137	165	190	219	249	304	330	352
		cells/ml								
<u>Chrysophyceae</u>										
Calymonas ovalis	6 x 4	-	-	384	-	130	36	118	2	16
Ochromonas sp.	10 x 8	-	-	-	-	30	-	88	-	-
Pavlova sp.	13 x 7	-	-	-	-	-	-	44	-	-
Pseudopedinella pyriforme	7 x 9	-	-	-	-	-	-	-	-	34
Ebria tripartita	30	-	-	-	-	-	-	-	12	-
Total		384			160	36	250	14	50	
<u>Parasinophyceae</u>										
Pyramimonas sp.	10 x 6	-	-	-	-	-	-	94	36	-
P. amyliifrer	16 x 12	-	-	-	-	-	-	-	4	224
Tetraselmis maculata	6 x 3	-	-	-	-	-	-	-	52	362
T. gracilis	15 x 2	-	-	-	-	-	-	-	48	54
Total		94			140	640				

Table (continued)

Day of 1973

Algal Class	(um)	87	137	165	190	219	249	304	330	352
		cells/ml								
<u>Chlorophyceae</u>										
Chlamydomonas sp.	10 x 8	-	-	12	-	-	-	14	-	-
"	" 5 x 2	-	-	-	-	-	-	104	-	68
"	" 8 x 5	-	-	-	-	-	-	58	-	-
"	" 13 x 7	-	-	-	-	-	-	-	-	68
Chlorella sp.	4.0	-	-	62	-	80	58	258	-	38
Total	-	-	74	-	80	58	434	-	174	685
<u>Bacillariophyceae</u>										
Pleurosigma sp.	120 x 5	-	-	6	-	-	-	-	-	-
Amphora sp.	20 x 8	-	-	12	-	-	-	-	-	-
Navicula sp.	30 x 10	-	-	12	-	-	-	-	-	-
Cyclotella	5	-	-	314	-	72	-	-	54	106
Thalassiosira sp.	8	-	-	144	-	-	-	1100	-	-
Coscinodiscus sp.	10	-	-	88	-	10	20	28	12	-
Thalassiosira sp.	13	-	-	16	-	-	-	-	-	-

Table (continued)  
Day off 1973

Dav of 1973

Table (continued)

Day of 1973

Algal Class	(um)	87	137	165	190	219	249	304	330	352
Phytoplankton	5 x 3	-	-	-	-	11	6	-	-	-
Total	1,400	-	-	-	23,000	41	6	4	-	-
<u>Cryptophyceae</u>										
<i>Cryptomonas</i> sp.	4.5 x 8.5	6,000	-	-	-	-	-	-	-	-
" "	25 x 18	-	300	-	-	-	-	-	-	-
" "	12 x 8	-	-	-	-	60	14	118	26	120
<i>C. pseudobaltilica</i>	15 x 10	-	-	-	-	-	-	132	-	106
<i>Chroomonas caroliniana</i>	8 x 4	-	-	-	-	-	-	36	-	-
<i>C. minuta</i>	10 x 5	-	-	-	-	50	-	96	-	-
Total	6,000	300	23,000	110	14	382	26	226		
<u>Euglenophyceae</u>										
<i>Euglena</i> sp.	12 x 3	1,100	-	-	-	-	-	-	-	-
" "	85 x 8	-	-	-	300	-	-	-	-	-
" "	55 x 10	-	-	-	900	888	14	-	-	-
" "	15 x 5	-	-	-	-	54	4	22	-	564

Table (continued)

Day of 1973

Algal Class	( $\mu\text{m}$ )	87	137	165	190	219	249	304	330	352
		cells/ml								
Euglena sp.	35 x 4	-	-	-	-	-	-	-	-	16
Total	1,100	-	-	-	1,200	942	18	22	-	580
<u>Haptophyceae</u>										
Prymnesium parvum	-	-	-	-	-	-	-	68	20	-
Parachrysidalis estuariale	-	-	-	-	-	-	-	14	-	-
Chrysochromulina sp. 8 x 5	-	-	-	-	-	-	-	30	24	778
" " 7 x 5	-	-	-	-	-	92	-	60	-	-
" " 10 x 7	-	-	-	-	-	-	-	80	-	-
Hymenomonas roseola	16 x 15	-	-	-	-	-	-	-	14	-
Total	-	-	-	-	-	92	-	252	58	778

688

Table Contribution Of Phytoplankton Species To The Total Volume Of Phytoplankton Biomass In  
Rhode River 200 Meters South Of Rhode River Km. 3.20 At A Depth Of One Meter In 1973

Algal Class	(um)	Day of 1973						mm <sup>3</sup> /L	689
		87	137	165	190	219	249		
<u>Dinophyceae</u>									
<i>Prorocentrum minimum</i>	18 x 16	-	804.0	0.176	0.453	-	0.020	0.003	0.036
<i>Gymnodinium</i> sp.	18 x 16	-	-	0.047	-	-	-	-	-
<i>G. nelsonii</i>	70 x 50	-	-	0.150	8.517	-	-	-	-
<i>Gymnodinium</i> sp.	15 x 12	-	-	0.133	-	-	-	-	-
<i>G. punctatum</i>	12 x 5	-	-	0.092	1.130	0.212	0.026	0.013	0.008
<i>G. splendens</i>	60 x 50	-	-	-	2.826	0.824	-	-	-
<i>G. album</i>	20 x 10	-	-	-	-	0.026	0.001	-	-
<i>G. subroseum</i>	17 x 15	-	-	-	-	-	-	0.013	0.260
<i>Gyrodinium estuariale</i>	12 x 10	-	-	0.018	-	0.107	0.046	0.031	0.042
<i>G. auranticum</i>	12 x 7	-	-	-	-	-	0.003	-	-

Table (continued)

Algal Class	(um)	87	137	165	190	219	249	304	330	352
		mm <sup>3</sup> /L								
G. carteretensis	23 x 13	-	-	-	-	-	-	0.059	0.002	0.019
G. metum	17 x 12	-	-	-	-	0.051	-	-	-	0.033
Gyrodinium sp.	26 x 20	-	-	-	-	-	-	0.002	-	-
Glenodinium danicum	25 x 20	-	-	0.009	-	0.328	-	0.266	-	-
G. ocellatum	20 x 23	-	-	-	-	-	-	0.070	-	-
G. rotundum	20 x 20	-	-	-	-	-	-	-	0.244	690
Peridinium brevipes	25 x 20	-	-	0.072	-	0.045	-	-	-	0.408
Peridinium sp.	17 x 13	-	-	0.025	-	0.090	-	0.095	-	-
Peridinium sp.	70 x 60	-	-	-	0.560	-	-	-	-	-
Amphidinium sp.	15 x 10	-	-	0.004	-	-	-	-	-	-
A. globosum	10 x 5	-	-	-	0.243	-	0.004	-	-	-
A. fusiform	10 x 8	-	-	-	-	0.064	-	-	-	-
Amphidinium sp.	20 x 10	-	-	-	-	-	-	0.017	0.016	-

Table (continued)

Table (continued)

Algal Class	(μm)	87	137	165	190	219	249	304	330	352
T. gracilis	15 x 2	-	-	-	-	-	-	-	0.056	0.037
<u>Chlorophyceae</u>										
Chlamydomonas sp.	10 x 8	-	-	0.010	-	-	-	0.005	-	-
"	" 5 x 2	-	-	-	-	-	0.001	-	-	0.001
"	" 8 x 5	-	-	-	-	-	-	0.001	-	-
"	" 13 x 7	-	-	-	-	-	-	-	-	0.046
Chlorella sp.	4.0	0.085	-	-	-	0.002	0.002	0.008	-	0.010
<u>Bacillariophyceae</u>										
Pleurosigma sp.	120 x 15	-	-	-	0.084	-	-	-	-	-
Amphora sp.	20 x 8	-	-	-	0.009	-	-	-	-	-
Navicula sp.	30 x 10	-	-	0.008	-	-	-	-	-	-
Cyclotella sp.	5	-	-	0.010	-	0.002	-	-	-	0.002
										0.003

Table (continued)

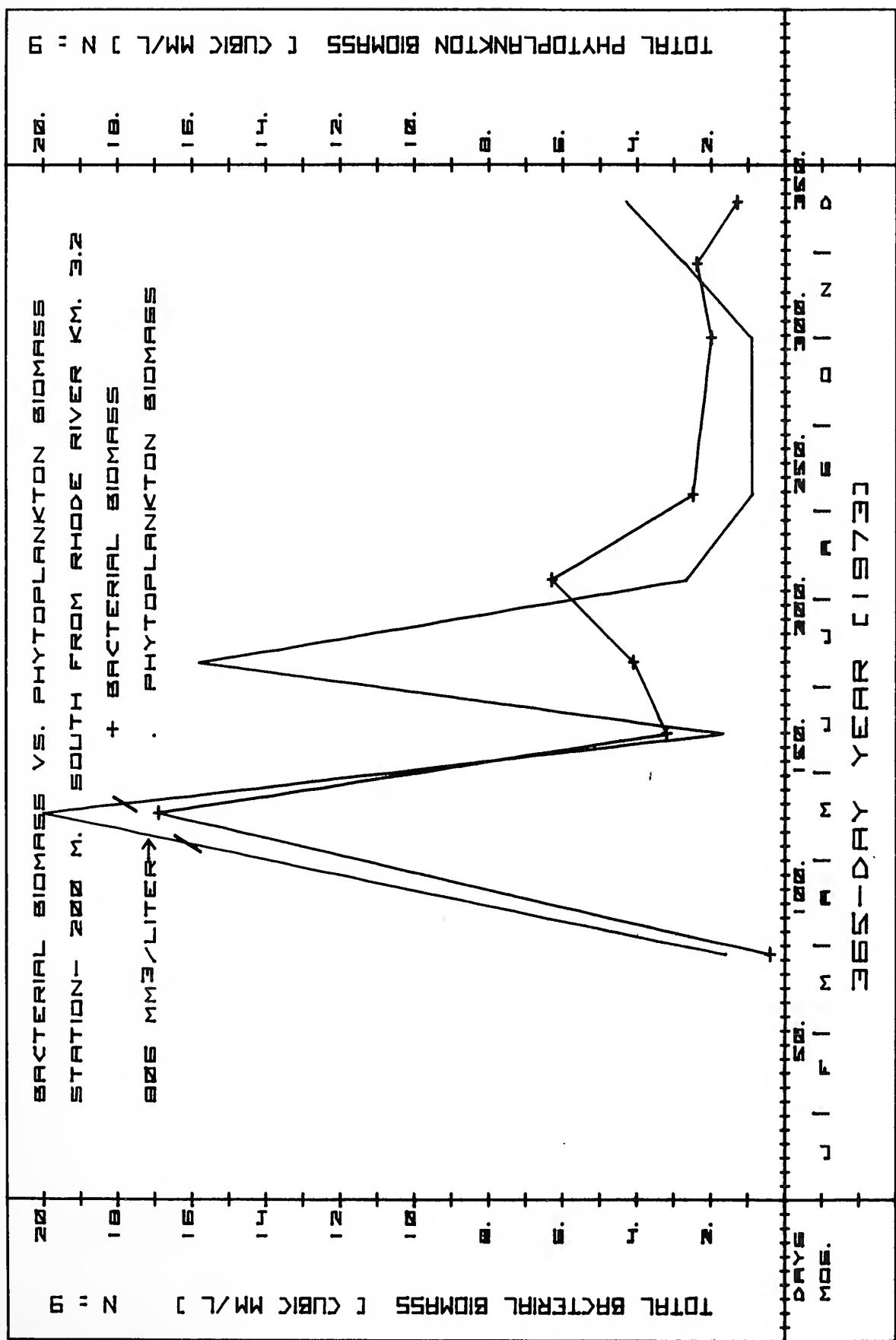
<u>Algal Class</u>	<u>(um)</u>	87	137	165	190	219	249	304	330	352
mm <sup>3</sup> /L										
Thalassiosira sp.	8	-	-	0.011	-	-	-	0.003	-	0.003
Coscinodiscus sp.	10	-	-	0.010	-	0.001	-	0.001	0.003	-
Thalassiosira sp.	13	-	-	0.003	-	-	-	-	-	-
Cyclotella sp.	10	-	-	-	0.001	0.001	-	0.005	-	-
Cyclotella sp.	20	-	-	-	-	-	0.003	-	-	-
<u>Nanoplankton</u>										
	3.5	0.308	-	-	-	-	-	-	-	-
	6 x 4	-	-	0.003	-	-	-	-	-	-
	7 x 4	-	-	-	1.180	-	-	0.001	-	-
	8 x 5	-	-	-	-	0.003	-	0.001	-	0.019
	4 x 3	-	-	-	-	0.002	0.001	-	-	-
	3 x 2	-	-	-	-	-	0.001	-	-	-

Table (continued)

Table (continued)

Table Distribution Of Biomass Between Phytoplankton And Bacteria In Rhode River 200 Meters  
 South Of Rhode River Km. 3.20

Day of 1973	Phytoplankton cells x 10 <sup>3</sup> /ml	Biomass mm <sup>3</sup> /L	Bacteria cells x 10 <sup>5</sup> /ml	Biomass mm <sup>3</sup> /L	Biomass Ratio Algal Bacteria	Total Biomass mm <sup>3</sup> /L
87	2.0	1.6	5.4	0.4	4.0	2.0
137	200.0	805.9	176.0	16.9	47.7	822.8
165	1.5	1.7	10.1	3.2	0.5	4.9
190	114.7	15.8	83.0	4.1	3.8	19.9
219	2.6	2.7	77.6	6.3	0.4	9.0
249	0.8	0.9	25.1	2.5	0.4	3.4
304	3.3	0.9	29.2	2.0	0.4	2.9
330	0.8	2.7	25.66	2.4	1.1	5.1
352	3.7	4.3	14.8	1.3	3.3	5.6
					696	



Phosphorus Uptake of Phytoplankton Using  $^{33}\text{P}$  - Autoradiography

Station - 200 Meters South from Rhode River Km 3.20

Technique - Relative phosphorus uptake by phytoplankton species in water was estimated by liquid emulsion autoradiography. Two  $\mu\text{c}$  of carrier free  $^{33}\text{P}$  - orthophosphate was added to each one liter capacity of light and dark bottles. At 30 minutes after the start of the experiment cells were fixed with gluteraldehyde. Fixed samples were then processed in the laboratory using NBT-2 emulsion. Method used is a modified procedure described by Bogoroch, R., Liquid Emulsion Autoradiography. p. 66-94 in "Autoradiography for Biologist". ed. Gahan, P. B. 1972, Academic Press, New York, N. Y. Grain counts were made on individual cells, at 1000x magnification using bright field optics. Relative phosphorus uptake was calculated from average number of grains found in individual cells per  $\mu\text{m}^3$  cell volume.

Principal Investigator: Maria A. Faust, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Relative Phosphorus Uptake by Phytoplankton as Estimated by  $^{33}\text{P}$  - Autoradiography in Rhode River 200 Meters South of Rhode River Km. 3.20 at a Depth of One Meter. Uptake was for 30 Minutes in a Light Bottle.

Algal Class	(um)	Day of 1973						699	
		87	137	165	190	219	249		
grain numbers/ $\mu\text{m}^3$ cell volume									
<u>Dinophyceae</u>									
Prorocentrum minimum	18 x 16	-	0.0089	0.0077	-	0.0017	-	-	-
Gymnodinium punctatum	12 x 5	-	-	0.1034	0.0287	0.0759	-	-	0.0276
Gyrodinium estuariale	12 x 10	-	-	0.0311	-	0.0061	-	-	0.0073
G. aurantium	12 x 7	-	-	-	-	0.0080	-	-	-
G. metum	17 x 12	-	-	-	-	-	0.0098	-	-
Peridinium brevipes	25 x 20	-	-	0.0034	0.0052	-	-	-	-
Peridinium sp.	17 x 13	-	-	0.0099	0.0075	-	0.0119	-	-
Amphidinium sp.	15 x 10	-	-	-	-	-	-	-	0.0300
A. globosum	10 x 5	-	-	-	-	-	0.0428	-	-

Table (continued)

	Day of 1973									
Algal Class	(um)	87	137	165	190	219	249	304	330	352
grain numbers/um <sup>3</sup> cell volume										
A. fusiform	10 x 8	-	-	-	-	0.0094	-	-	-	-
Katodinium rotundum	10 x 6	-	-	-	-	-	-	0.0278	0.0483	-
<u>Chrysophyceae</u>										
Calycomonas ovalis	6 x 4	-	-	-	0.0717	-	-	-	-	-
Ochromonas sp.	10 x 8	-	-	-	-	-	0.0114	-	-	-
Pavlova sp.	13 x 7	-	-	-	-	-	-	0.0111	-	-
<u>Parasinophyceae</u>										
Pyraminomas sp.	10 x 6	-	-	-	-	-	-	0.0355	0.0074	-
Tetraselmis gracilis	-	-	-	-	-	-	-	-	0.0042	0.0068
<u>Chlorophyceae</u>										
Chlamydomonas sp.	7	-	-	-	-	-	-	-	0.0383	-

Table (continued)

Day of 1973

Algal Class	( $\mu\text{m}$ )	87	137	165	190	219	249	304	330	352
grain numbers/ $\mu\text{m}^3$ cell volume										
Chlamydomonas sp.	13 x 7	-	-	-	-	-	-	-	-	0.0049
Chlorella sp.	4.0	0.0676	-	-	-	0.1269	-	-	-	-
Chlorella sp.	10.0	-	-	-	-	-	-	-	-	0.0102
Phytoplankton	7.5	0.0095	-	-	-	-	-	-	-	-
Nanoplankton	.8 x 5	-	-	-	-	-	-	0.0634	0.0383	
<u>Cryptophyceae</u>										
Cryptomonas sp.	8.5 x 4.5	0.0296	-	-	-	-	-	-	-	-
" "	25 x 18	-	0.0048	-	-	-	-	-	-	-
" "	12 x 8	-	-	0.0083	-	0.0485	0.0143	-	0.0074	
C. pseudobalitica	15 x 10	-	-	-	-	-	-	0.0081	-	-
Chromonas caroliniana	8 x 4	-	-	-	-	-	-	0.0577	-	-
C. minuta	10 x 5	-	-	0.0185	-	0.0401	-	-	-	-

Table (continued)

Day of 1973

Algal Class	(um)	87	137	165	190	219	249	304	330	352
-------------	------	----	-----	-----	-----	-----	-----	-----	-----	-----

grain numbers/ $\mu\text{m}^3$  cell volumeEuglenophyceae

Euglena sp.      55 x 10

-      -      -      -      0.0050

Haptophyceae

Prymnesium parvum      10 x 6

-      -      -      -      -

Chrysotrichina sp. 7 x 5

-      -      -      0.0226

"      " 10 x 7

-      -      -      -

"      " 10 x 7

-      -      -      -

"      " 10 x 7

-      -      -      0.0339

"      " 10 x 7

-      -      -      -

Carbonate Uptake of Phytoplankton Using  $^{14}\text{C}$  - Autoradiography

Station - 200 Meters South from Rhode River Km 3.20

Technique - Relative carbonate uptake by phytoplankton species in water was estimated by liquid emulsion autoradiography. Two uc at  $\text{pH}$  9.6 of  $\text{Na}^2\text{C}^{14}\text{O}_3$  (activity: 0.56 mc/mM) were added to each one liter capacity of light and dark bottles. At 30 minutes after the start of the experiment cells were fixed with gluteraldehyde. Fixed samples were then processed in the laboratory using NTB-2 emulsion. Method used is a modified procedure described by Bogoroch, R. Liquid Emulsion Autoradiography p. 66-94 in "Autoradiography for Biologists". ed. Gahan, P. B. 1972. Academic Press, New York, N. Y. Grain counts were made on individual cells, at 1000x magnification using bright field optics. Relative carbonate uptake was calculated from average number of grains found in individual cells per  $\mu\text{m}^3$  cell volume.

Principal Investigator: Maria A. Faust, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Relative Carbonate Uptake by Phytoplankton as Estimated by  $^{14}\text{C}$  - Autoradiography in Rhode River 200 Meters South of Rhode River Km. 3.20 at a Depth of One Meter. Uptake was for 30 Minutes in a Light Bottle.

Algal Class	(um)	Day of 1973						grain numbers/ $\mu\text{m}^3$	cell volume
		87	137	165	190	219	249		
Dinophyceae									
Prorocentrum minimum	18 x 16	-	0.0133	0.0129	-	0.0049	-	-	-
Gymnodinium punctatum	12 x 5	-	-	0.0241	0.0431	0.0966	-	-	0.0594
Gyrodinium estuariale	12 x 10	-	-	0.0325	-	0.0074	-	-	0.0148
G. auranticum	12 x 7	-	-	-	-	0.0175	-	-	-
G. metum	17 x 12	-	-	-	-	-	0.0201	-	-
Glenodinium danicum	25 x 20	-	-	-	-	-	-	0.0011	-
Peridinium brevipes	25 x 20	-	-	0.0068	0.0088	-	-	-	-
Peridinium sp.	17 x 13	-	-	0.0167	0.0157	-	0.0134	-	-

Table (continued)

Day of 1973

Algal Class	( $\mu\text{m}$ )	87	137	165	190	219	249	304	330	352
Amphidinium sp.	15 x 10	-	-	-	-	-	-	-	-	0.0363
A. fusiform	10 x 8	-	-	-	0.0109	-	-	-	-	-
Katodinium rotundum	10 x 6	-	-	-	-	-	-	0.0362	0.0674	

Chrysophyceae

										705
Calymonas ovalis	6 x 4	-	-	-	0.0971	-	-	-	-	-
Ochromonas sp.	10 x 8	-	-	-	-	0.0248	-	-	-	-
Pavlova sp.	13 x 7	-	-	-	-	-	0.0205	-	-	-

Parasinophyceae

Pyraminomas sp.	10 x 6	-	-	-	-	-	-	0.0713	0.0115
Tetraselmis gracilis	10 x 7	-	-	-	-	-	-	0.0063	0.0144

Table (continued)

Algal Class	(um)	Day of 1973						706			
		87	137	165	190	219	249				
grain numbers/um <sup>3</sup> cell volume											
<u>Chlorophyceae</u>											
Chlamydomonas sp.	7	-	-	-	-	-	0.0451	-	-		
" "	13 x 7	-	-	-	-	-	-	-	0.0085		
Chlorella sp.	4	0.1088	-	-	-	0.1826	-	-	-		
" "	10	-	-	-	-	-	-	-	0.0126		
Nanoplankton	8 x 5	-	-	-	-	-	-	0.0676	0.0500		
Phytoplankton	7.5	0.0591	-	-	-	-	-	-	-		
<u>Cryptophyceae</u>											
Cryptomonas sp.	8.5 x 4.5	0.7185	-	-	-	-	-	-	-		
" "	25 x 18	-	0.0063	-	0.0091	-	-	-	-		
" "	12 x 8	-	-	-	-	-	0.0523	0.0469	-		
C. pseudobaltica	15 x 10	-	-	-	-	-	-	0.0194	-		

Table (continued)

Day of 1973

Algal Class	( $\mu\text{m}$ )	87	137	165	190	219	249	304	330	352
grain numbers/ $\mu\text{m}^3$ cell volume										
<i>Chroomonas caroliniana</i>	8 x 4	-	-	-	-	-	-	0.0753	-	-
<i>C. minuta</i>	10 x 5	-	-	-	-	0.0320	-	0.0757	-	-
<u>Euglenophyceae</u>										
<i>Euglena</i> sp.	55 x 10	-	-	-	-	0.0050	-	-	-	-
<u>Haptophyceae</u>										
<i>Prymnesium parvum</i>	10 x 6	-	-	-	-	-	0.0277	-	0.0122	-
<i>Chrysoschromulina</i> sp.	7 x 5	-	-	-	0.0598	-	-	-	-	0.0480
"	" 10 x 7	-	-	-	-	-	0.0713	-	-	-

Plankton Community (map 2)

Uptake Experiments

Station - 200 Meters South From Rhode River Km. 3.20

Plankton Uptake Experiments - Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Chlorophyll - Assayed as described by Loftus, M. E.; Carpenter, J. H., 1971. "A Fluorometric Method for Determining Chlorophylls a, b, and c", Journal of Marine Research, 29: 319 - 338.

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Plankton Community

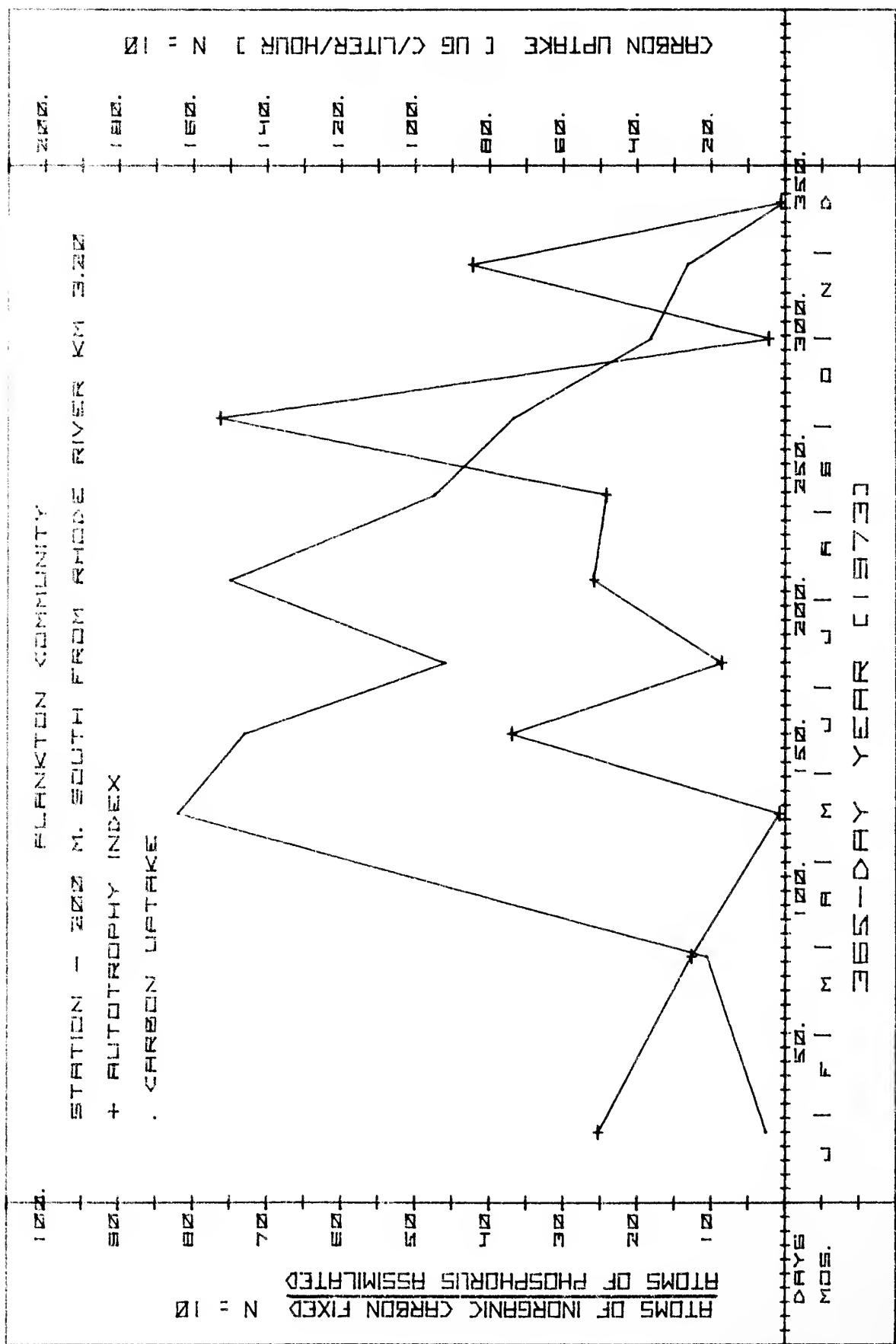
## Uptake Experiments

Station - 200 Meters South From Rhode River Km. 3.20

Autotrophy Index -  $\frac{\text{Atoms Of Inorganic Carbon Fixed}}{\text{Atoms Of Phosphorus Assimilated}}$ 

Carbon Uptake - (ug C/liter/hr/)

Day of 1973	Autotrophy Index	Carbon
25	25.3	5.14
87	12.7	213.00
137	0.84	164.00
165	37.0	14.6
190	8.6	91.9
219	25.9	150.0
249	24.2	94.9
276	-	-
304	76.3	73.5
330	2.2	36.4
352	42.3	26.5
	N=10	N=10



## Phytoplankton Primary Production, Biomass (Carbon and Chlorophyll), Photosynthetic Assimilation Ratio, and Photosynthetic Efficiency

Technique: Samples at designated stations were collected with Van Dorn bottles or were pumped from a given depth with a peristaltic pump. Transect samples were collected by continuously pumping water from a depth of 0.5 to 1.0 meter into a carboy while traversing the transect. Subsamples were taken for analyses. RR transect 1A was along the RR channel axis from Km 0.0 to Km 2.3. RR transect 4A was along the RR channel from Km 3.5 to 4.3. Incident light was measured with a footcandle meter which was later correlated with incident pyranometer measurements. Energy available at a given depth for in situ productivity was calculated using attenuation coefficients based either on Secchi disc or calibrator 4pi photocell light measurements. Samples for Chlorophyll analysis were filtered through Reeve angel 984H glass fiber filters which had been previously rinsed with de-ionized water. The filter pads were frozen for extraction in the laboratory chlorophyll was determined flourimetrically as described by Loftus, M. E. and Carpenter, J. H. (1971), J. Mar. Res. 29; 319-338. Primary Productivity was measured in bottles, incubated in situ, by the C-14 method of Steeman-Nielson. Algal Biomass was also determined by direct microscopic counts and measurements of freshly collected samples. The total particulate phytoplankton carbon was then calculated from a regression equation described in 1967 by Mullin, et al.  $\log C = 0.79 \log \text{cell vol.} - 0.29$  (picograms)  $(\mu\text{m}^3)$

Principal Investigator: Howard H. Seliger, McCollum-Pratt Institute  
Johns Hopkins University, Baltimore, Maryland.

Research Funding: U. S. Atomic Energy Commission and Program for Research  
Applied to National Needs of the National Science Foundation and the Smithsonian  
Institution's Environmental Science Program.

Table Phytoplankton Primary Production Biomass, Photosynthetic Assimilation Ratio and Photosynthetic Efficiency

Day of Year 1973	Station	Primary Production (g C/m <sup>2</sup> .hr)	Phytoplankton			Photosynthetic Assimilation Ratio mg C/hr/mg Chl a	Photosynthetic Efficiency Einstein's/mole of Carbon fixed
			g C/m <sup>2</sup>	g Chl a/m <sup>2</sup>	ug Chl a/l		
10	RR Km 2.3	-	-	-	-	10.2	-
10	RR Km 3.9	-	-	-	-	7.9	-
61	RR Km 2.3	-	-	-	-	4.2	-
75	RR Km 2.3	-	-	-	-	8.52	-
80	RR Km 2.3	-	-	-	-	11.2	-
87	RR Km 2.3	-	-	-	-	20.1	-
100	RR Km 2.3	-	-	-	-	41.5	-
115	RR Km 2.3	-	-	-	-	50.2	-
122	RR Km 3.9	0.213	51.8	0.086	60.5	2.5	128
131	RR Km 2.3	0.242	79.0	0.158	93.7	1.5	214
138	RR Km 2.3	0.164	79.5	0.137	81.2	1.2	382
150	RR Km 2.3	0.192	43.5	0.075	139.1	2.6	238

(Continued)

Day of Year 1973	Station	Primary Production (g C/m <sup>2</sup> .hr)	$\frac{g\text{ C/m}^2}{g\text{ Chl a/m}^2}$	$\frac{\text{PhytoplanktonBiomass}}{g\text{ Chl a/m}^2}$	$\frac{\text{mg C/hr/mg Chl a}}{\text{ug Chl a/1}}$	Photosynthetic Assimilation Ratio mg C/hr/mg Chl a	Photosynthetic Efficiency Einstein's/mole of Carbon fixe
157	RR Km 2.3	0.187	31.2	0.104	46.2	1.8	244
164	Transect 1A	0.242	38.5	0.104	38.4	2.3	157
171	Transect 1A	0.274	18.1	0.0695	60.8	3.9	71
190	RR Km 3.9	-	-	-	69.5	-	-
197	RR Km 3.9	-	-	-	63.6	-	-
204	RR Km 3.9	-	-	-	31.0	-	-
215	Transect 1A	0.067	38.2	0.0955	137.0	0.70	114
215	Transect 4A	-	-	-	43.0	-	-
222	Transect 1A	-	-	-	90.8	-	-
222	Transect 4A	0.170	-	-	56.0	-	-
248	Transect 1A	0.170	86.1	0.261	82.3	0.65	213
248	Transect 4A	-	-	-	94.1	-	-
262	Transect 1A	0.180	78.6	0.157	96.2	1.2	289
262	Transect 4A	-	-	-	78.2	-	-

(Continued)

Day of Year 1973	Station	Primary Production (g C/m <sup>2</sup> .hr)	Phytoplankton Biomass g C/m <sup>2</sup>	Phytoplankton Biomass g Chl a/m <sup>2</sup>	ug Chl a/l	Assimilation Ratio mg C/hr/mg Chl a	Photosynthetic Efficiency Einstein's/mole of Carbon fixe
284	RR Km 2.3	-	-	-	44.0	-	-
299	RR Km 3.9	-	-	-	16.0	-	-
322	RR Km 3.9	0.0289	15.8	0.0317	14.8	0.91	140
330	Transect 1A	0.0522	19.6	0.0392	19.0	1.3	877
340	Transect 1A	0.0907	22.2	0.0445	23.0	2.0	629
					715		

## Open Water Metabolism Data, 1973

Technique: Volume averaged estimates of productivity and respiration were made from dissolved oxygen profile data taken at early morning minimum point evening high point, and next early morning low points in the diurnal oxygen curves for each day in table. Calculations were made by a modified Odum type procedure and include estimates of air water physical exchange.

Principal Investigator: Robert L. Cory, U. S. Geological Survey, Edgewater, Maryland.

Research Funding: U. S. Geological Survey and program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Open Water Metabolism Data - 1973

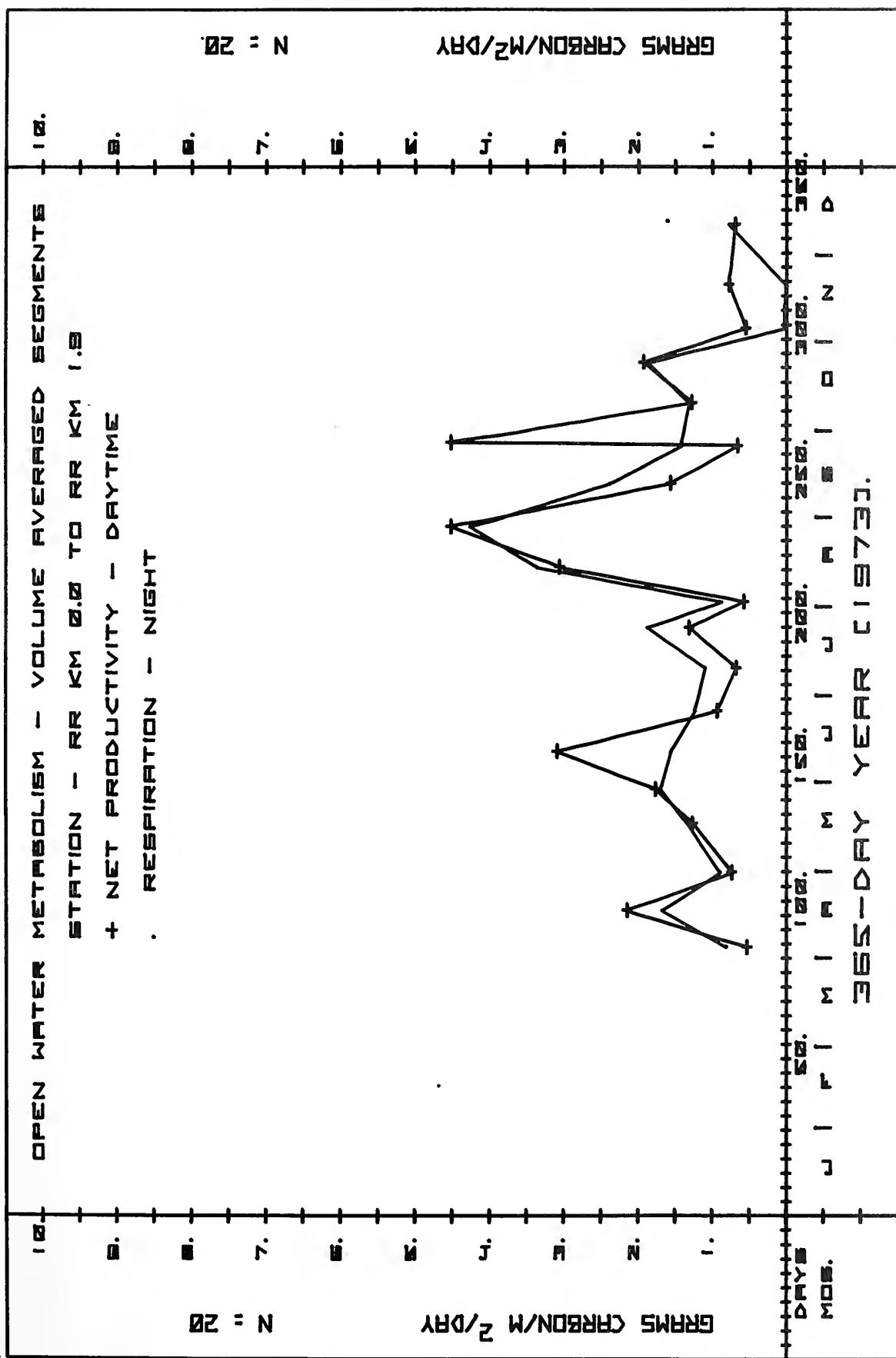
Day of Year	grams carbon/M <sup>2</sup> /day for Volume Averaged Segments				RR Km 3.7 to RR Km 4.6 P*	RR Km 3.7 to RR Km 4.6 R**
	RR Km 0.0 to RR Km 1.9 P*	RR Km 1.9 to RR Km 3.7 R**	RR Km 1.9 to RR Km 3.7 P*	RR Km 1.9 to RR Km 3.7 R**		
94	0.53	0.81	1.27	1.49	0.70	1.23
107	2.15	1.68	1.80	1.53	0.91	0.90
120	0.74	0.90	0.96	1.12	0.70	0.65
137	1.27	1.34	2.04	1.32	1.37	0.79
149	1.77	1.70	1.81	1.73	0.74	0.35
162	3.09	1.56	3.04	2.10	0.89	0.92
176	0.94	1.24	0.89	1.44	1.40	1.24
191	0.68	1.10	0.18	1.25	0.01	1.29
205	1.32	1.88	1.68	1.69	1.74	1.74
214	0.58	0.88	1.00	1.37	0.80	0.63
226	3.06	3.36	1.34	2.26	1.78	1.58
240	4.52	4.26	3.54	4.54	1.68	2.41
255	1.57	2.39	1.73	2.43	1.01	1.49

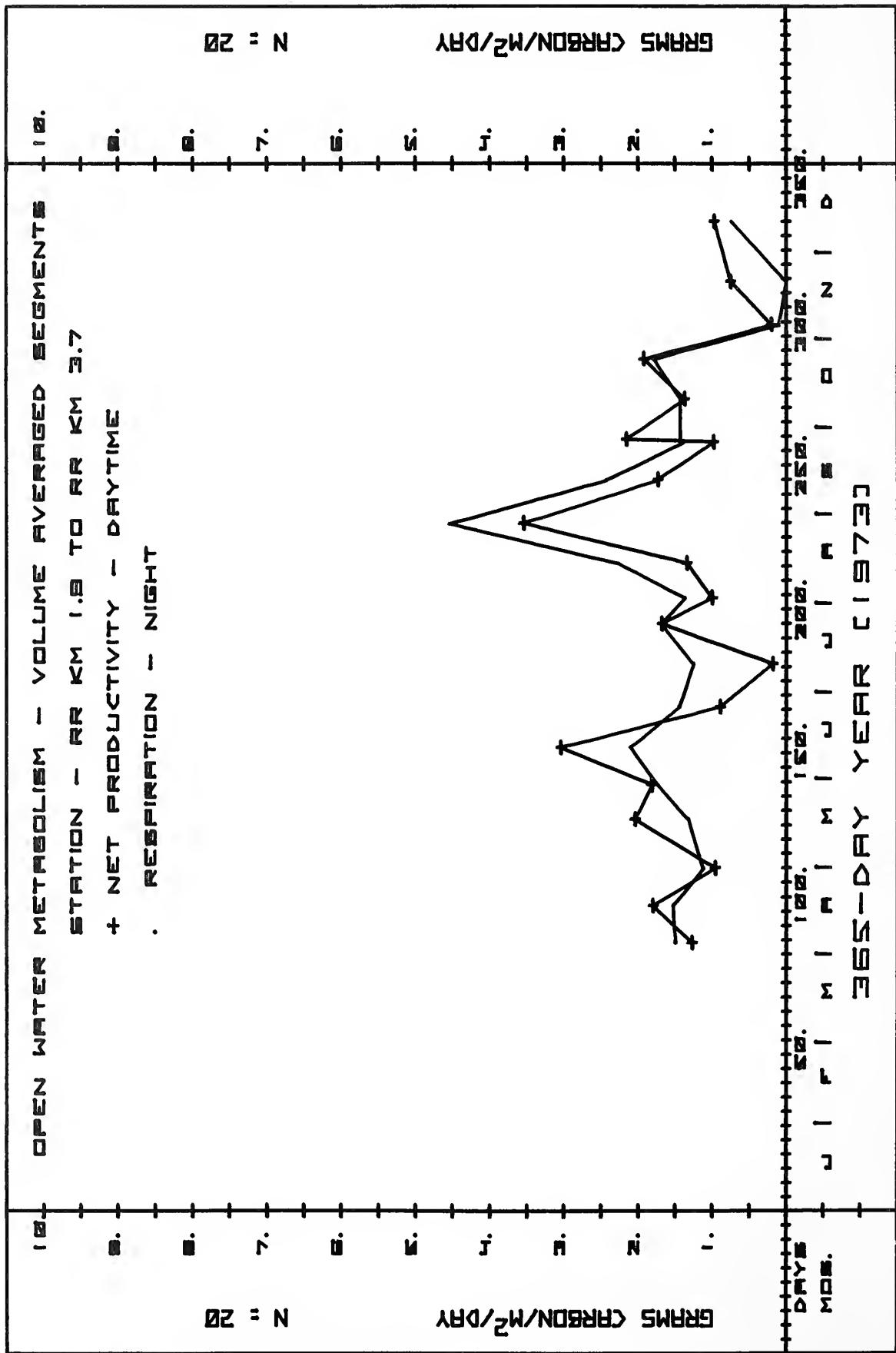
(continued)

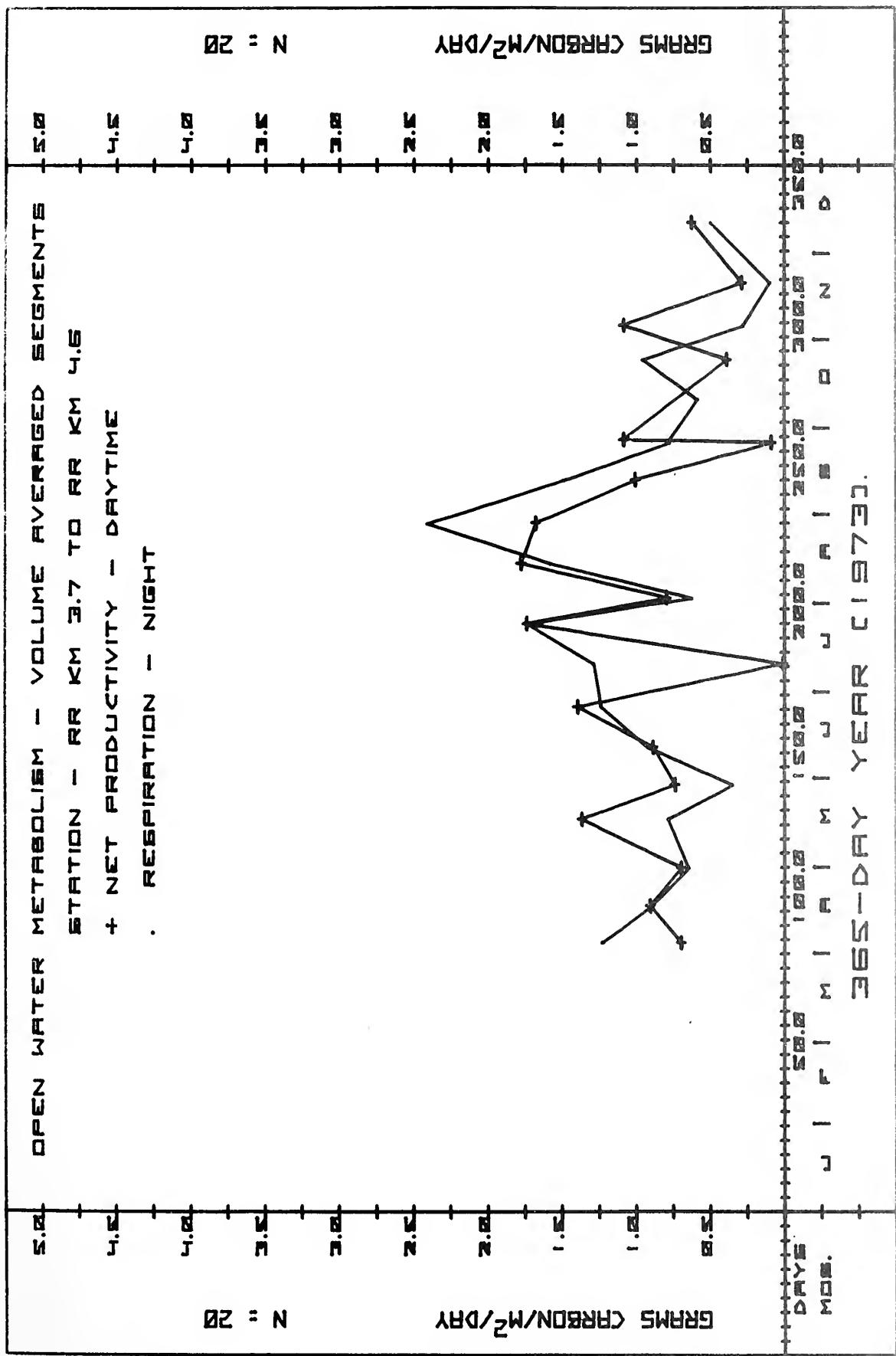
Day of Year	RR Km P*	0.0 to RR Km R**	1.9	grams carbon/M <sup>2</sup> /day for Volume		Averaged Segments	RR Km 3.7 to RR Km 4.6 P*
				RR Km 1.9 to RR Km 3.7 P*	R**		
268	0.66	1.42	0.98	1.39		0.09	0.78
269	4.52	1.42	2.16	1.43		1.09	0.78
283	1.28	1.32	1.37	1.42		0.39	0.59
297	1.93	1.88	1.92	1.79		1.09	0.96
309	0.55	0.03	0.20	0.10		0.29	0.28
324	0.78	0.01	0.75	0.00		0.63	0.10
345	0.69	0.78	0.97	0.74		0.63	0.50

\*P = Net productivity during daytime.

\*\*R = Respiratory utilization during night time.







Plankton Community (map 2)

Uptake Experiments

Station - 200 Meters South From Rhode River Km. 3.20

Plankton Uptake Experiments - Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Chlorophyll - Assayed as described by Loftus, M. E.; Carpenter, J. H., 1971. "A Fluorometric Method for Determining Chlorophylls a, b, and c", Journal of Marine Research, 29: 3.9 - 338.

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Plankton Community

## Uptake Experiments

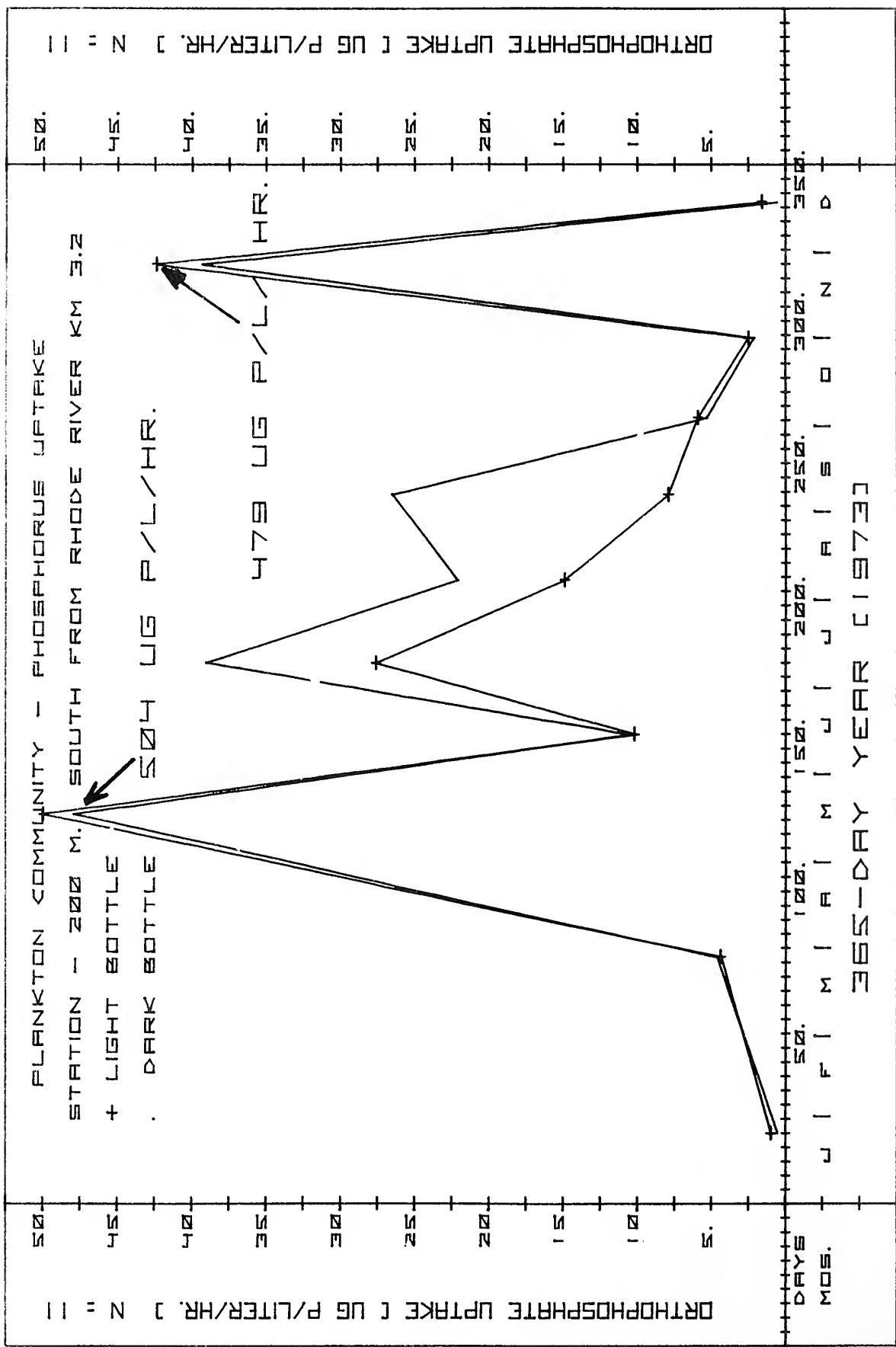
Station - 200 Meters South From Rhode River Km. 3.20

Phosphorus (ug P/liter/hr.)

Day of 1973	Light Bottle	Dark Bottle
25	0.99	0.53
87	4.38*	4.68*
137	504.00**	478.70**
165	10.20	10.50
190	27.60	39.00
219	14.90	22.10
249	7.90	26.50
276	5.90	5.30
304	2.50	2.10
330	42.40	39.30
352	1.60	0.62
	N=11	N=11

\*Dissolved orthophosphate pool was between 0.0 and 1.0 (ug P/liter) and was assumed to be 1.0. Therefore this is an upper limit on the rate.

\*\*These values were in a dense dinoflagellate bloom and are minimum rates. Rates were too fast to be measured more precisely.



Plankton Community (map 2)

Uptake Experiments

Station - 200 Meters South From Rhode River Km 3.20

Plankton Uptake Experiments - Assays determined as described by Correll, D. L.;

Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in  
2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina  
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Chlorophyll - Assayed as described by Loftus, M. E.; Carpenter, J. H., 1971.  
"A Fluorometric Method for Determining Chlorophylls a, b, and c", Journal of  
Marine Research, 29: 319 - 338

Principal Investigator: David L. Correll, Radiation Biology Laboratory,  
Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the  
National Science Foundation and the Smithsonian Institution's Environmental  
Sciences Program.

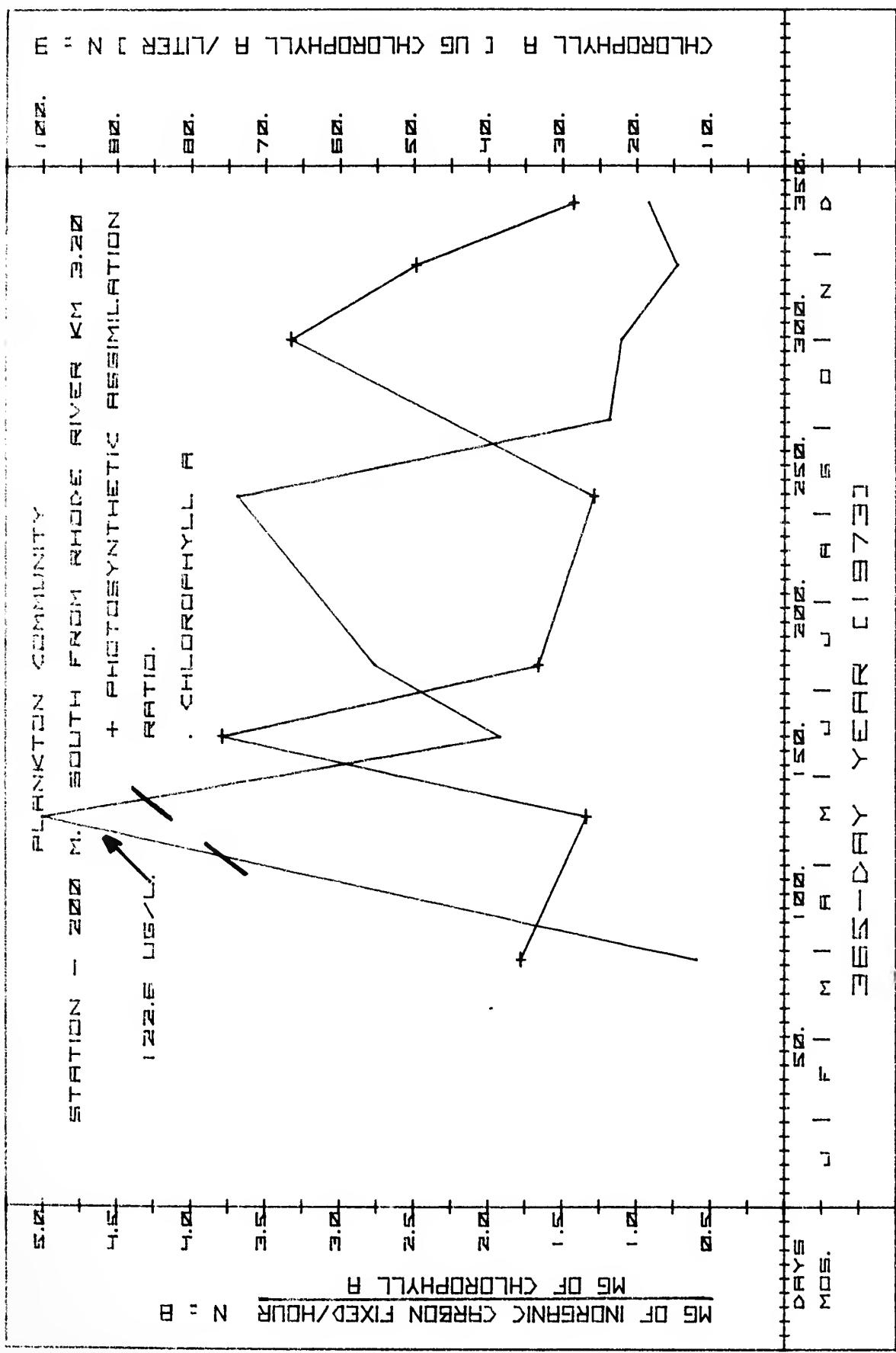
Plankton Community  
Uptake Experiments

Station - 200 Meters South From Rhode River Km. 3.20

Photosynthetic Assimilation Ratio -  $\frac{\text{mg Carbon/hr.}}{\text{mg Chlorophyll a}}$

Chlorophyll a - (ug Chlorophyll a / liter)

Day of 1973	Assimilation Ratio	Chlorophyll a
25	-	-
87	1.78	12.0
137	1.34	122.6
165	3.79	38.5
190	1.66	55.3
219	-	-
249	1.29	73.8
276	-	23.7
304	3.33	22.1
330	2.49	14.6
352	1.43	18.5
	N=8	N=9



Copepod Populations in the Rhode River in 1973

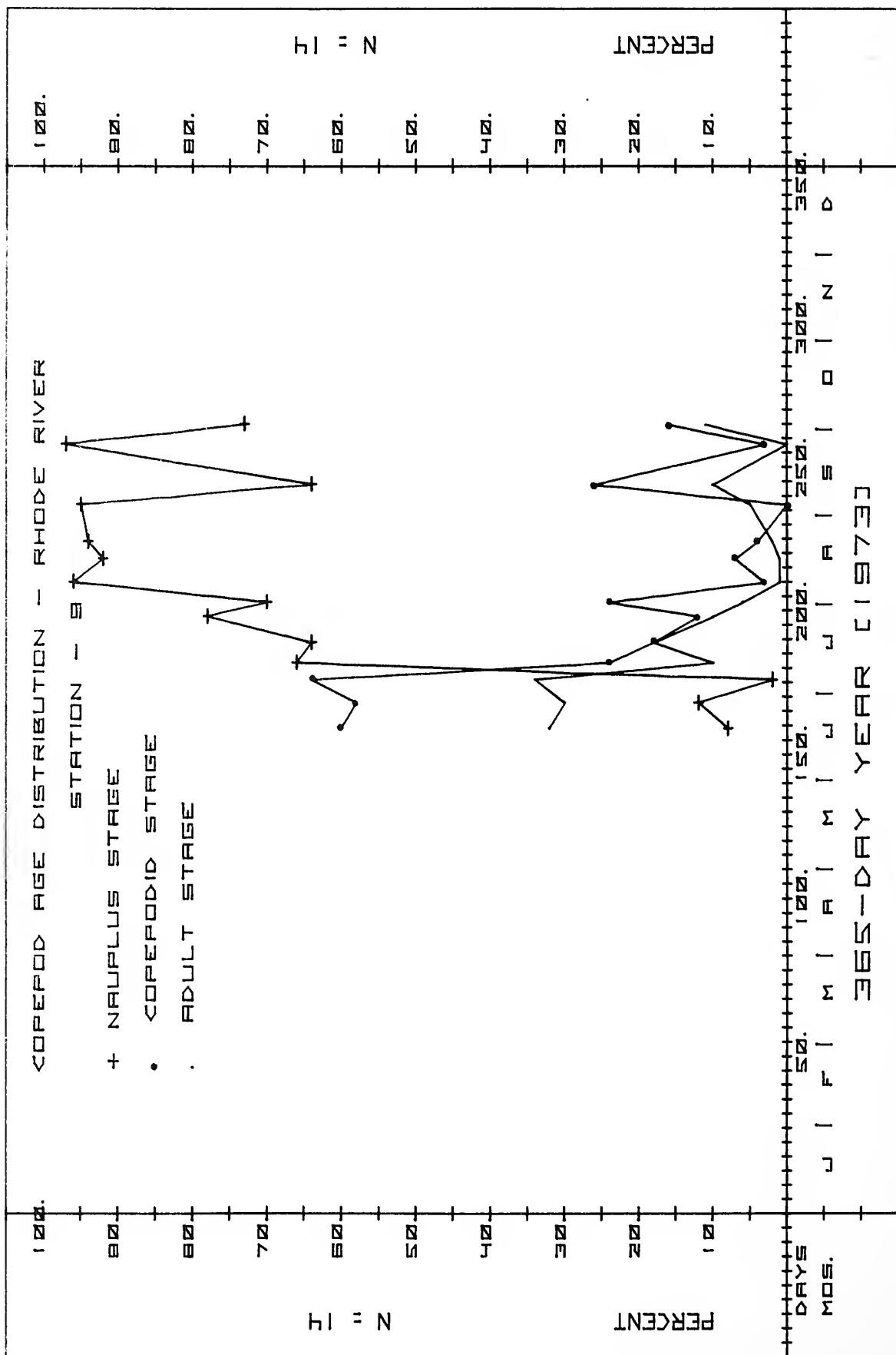
Method of Estimation: Vertical Zooplankton net hauls were made and the contents were determined by microscopy.

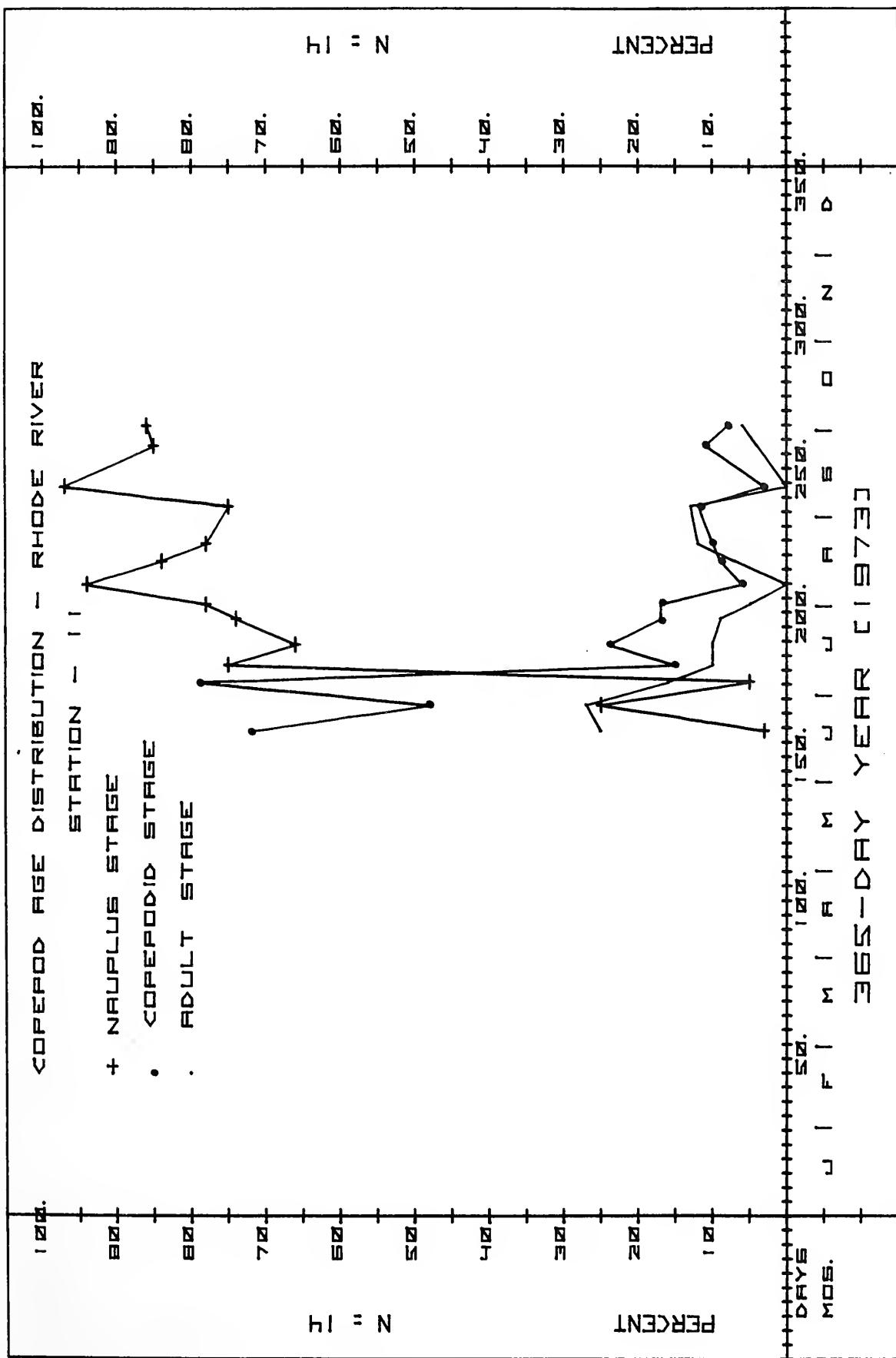
Principal Investigator: J. David Allan, Department of Zoology, University of Maryland, College Park, Maryland.

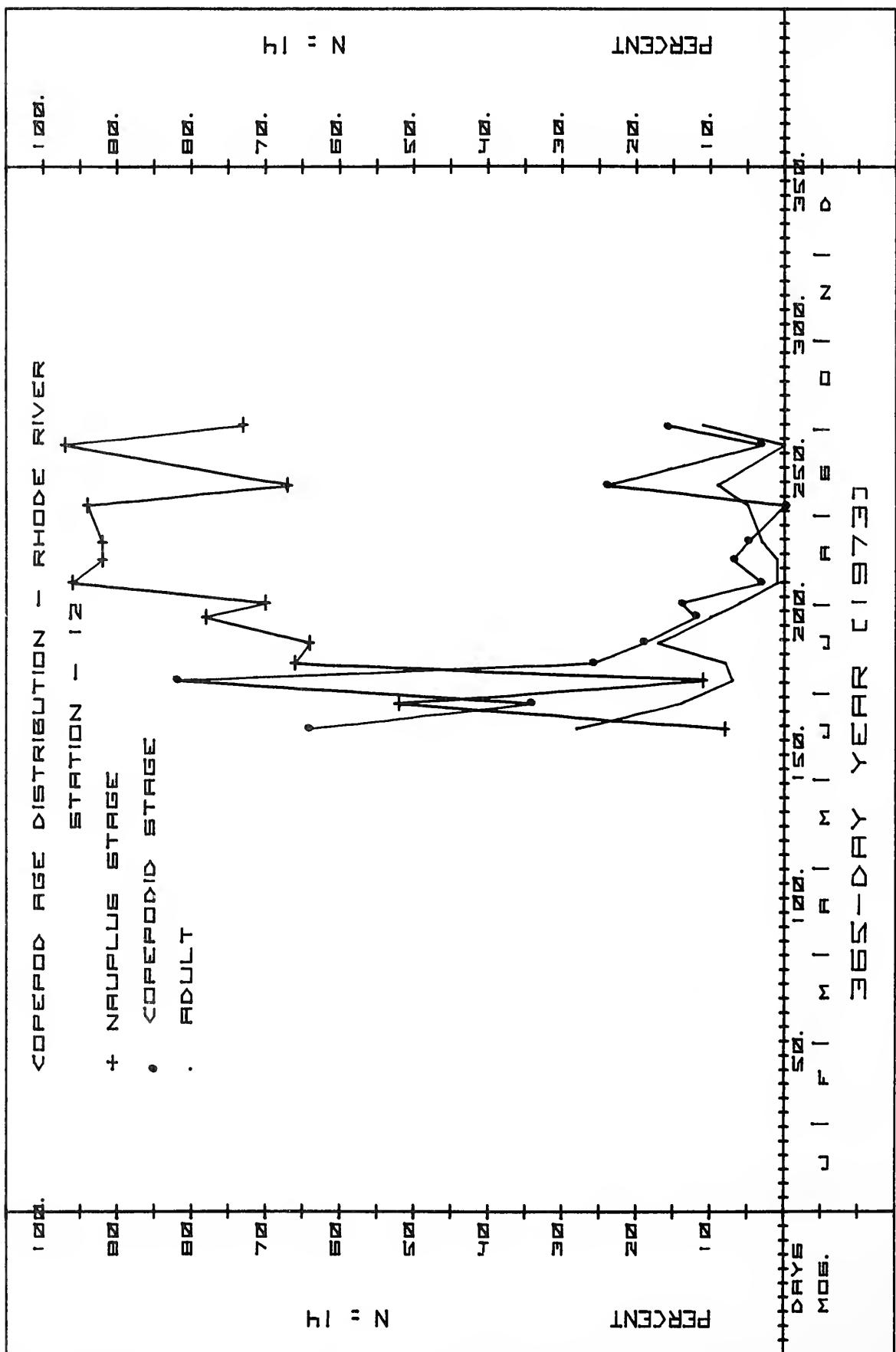
Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

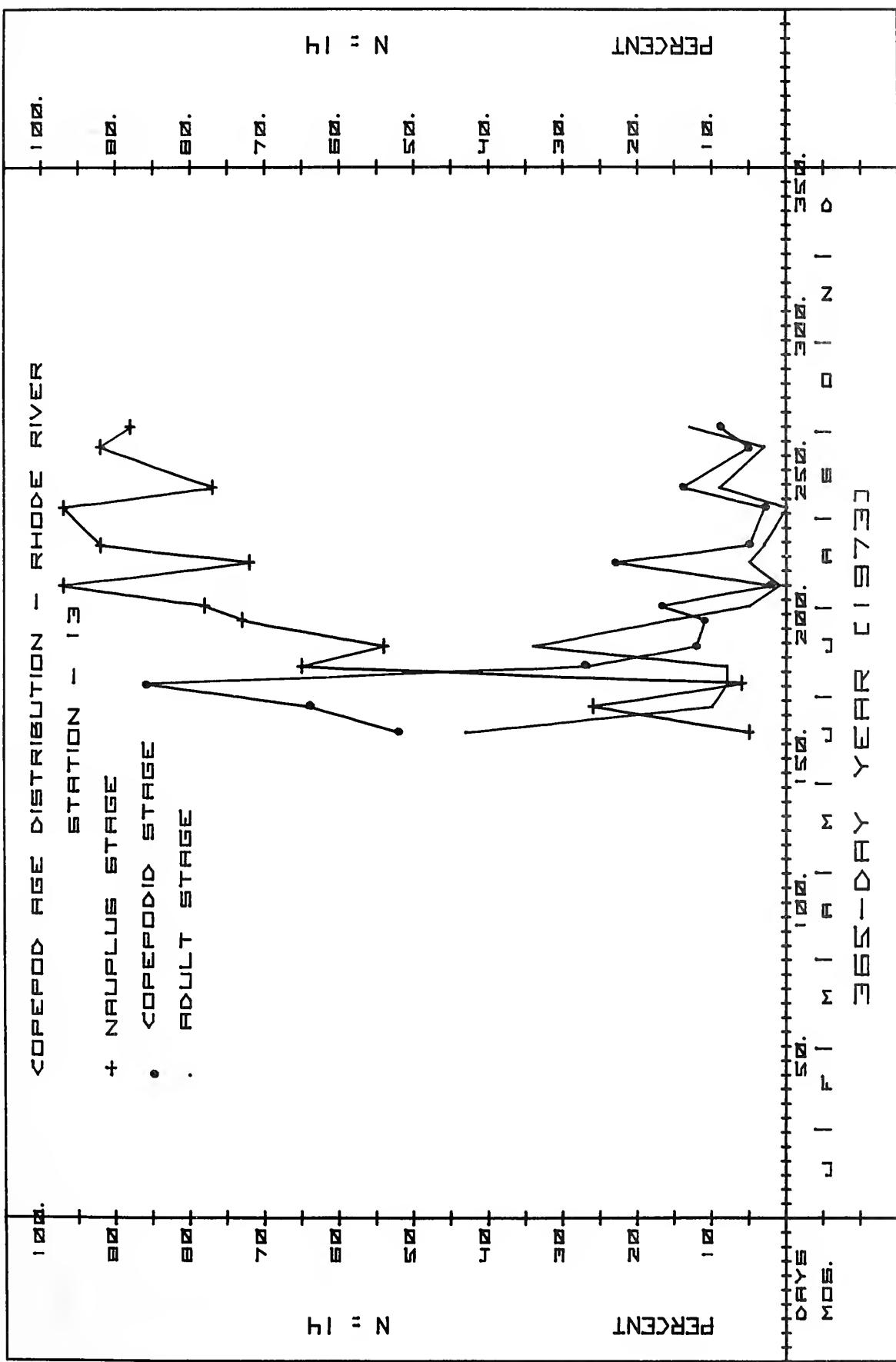
Table Species List and Average Relative Abundance of Rhode River Copepods,  
1 June to 15 October, 1973. Stations 9, 11, and 12; (map 2)

<u>Species</u>	<u>% Abundance</u>
<u>Acartia clausi</u>	0.1
<u>A. tonsa</u>	76.6
<u>Ergrasilus caeruleus</u>	0.1
<u>Eurytemora affinis</u>	0.1
<u>Oithora brevicornis</u>	0.1
<u>Scottolana canadensis</u>	23.0









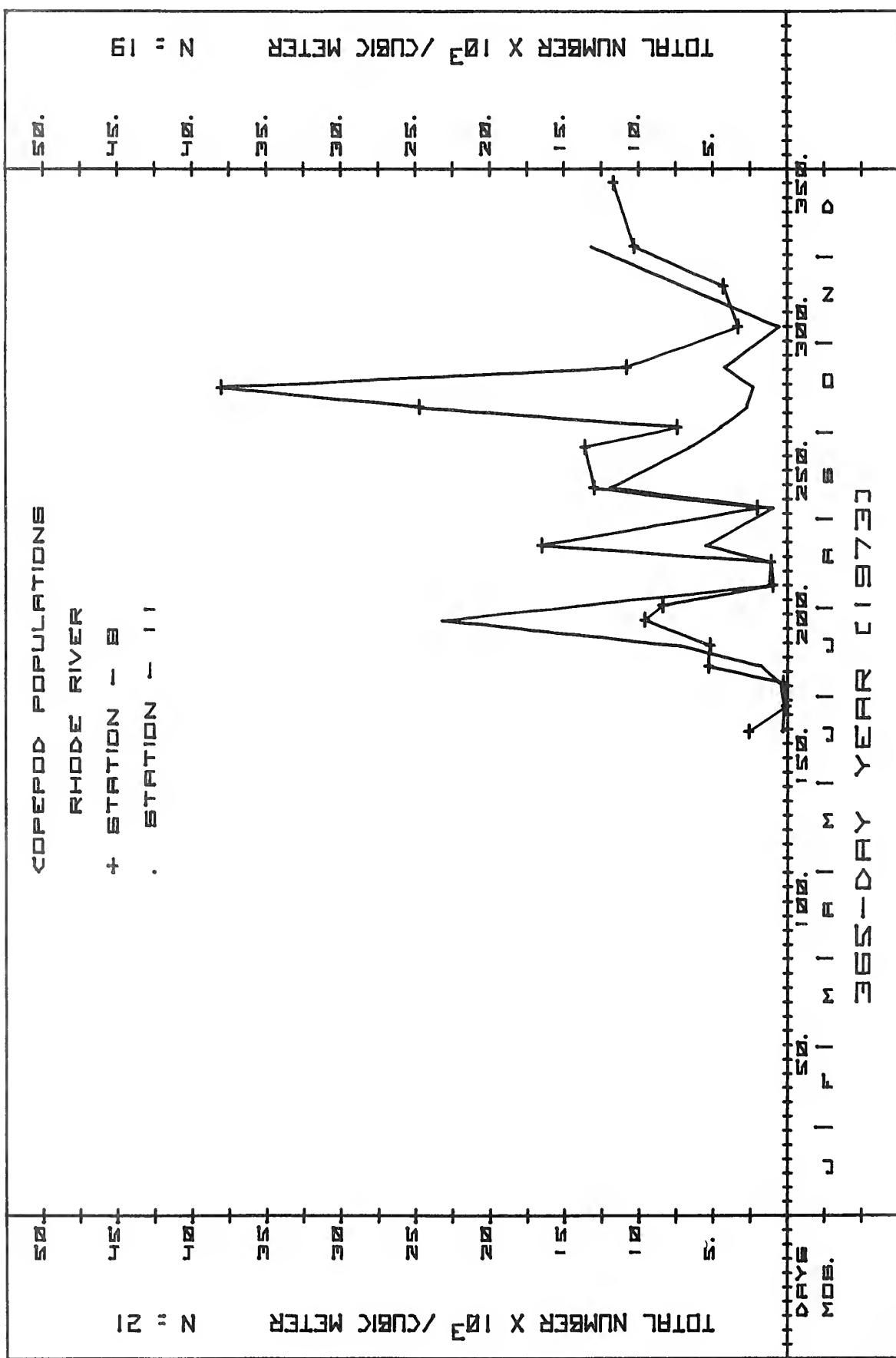
## Copepod Age Distribution in Rhode River, 1973

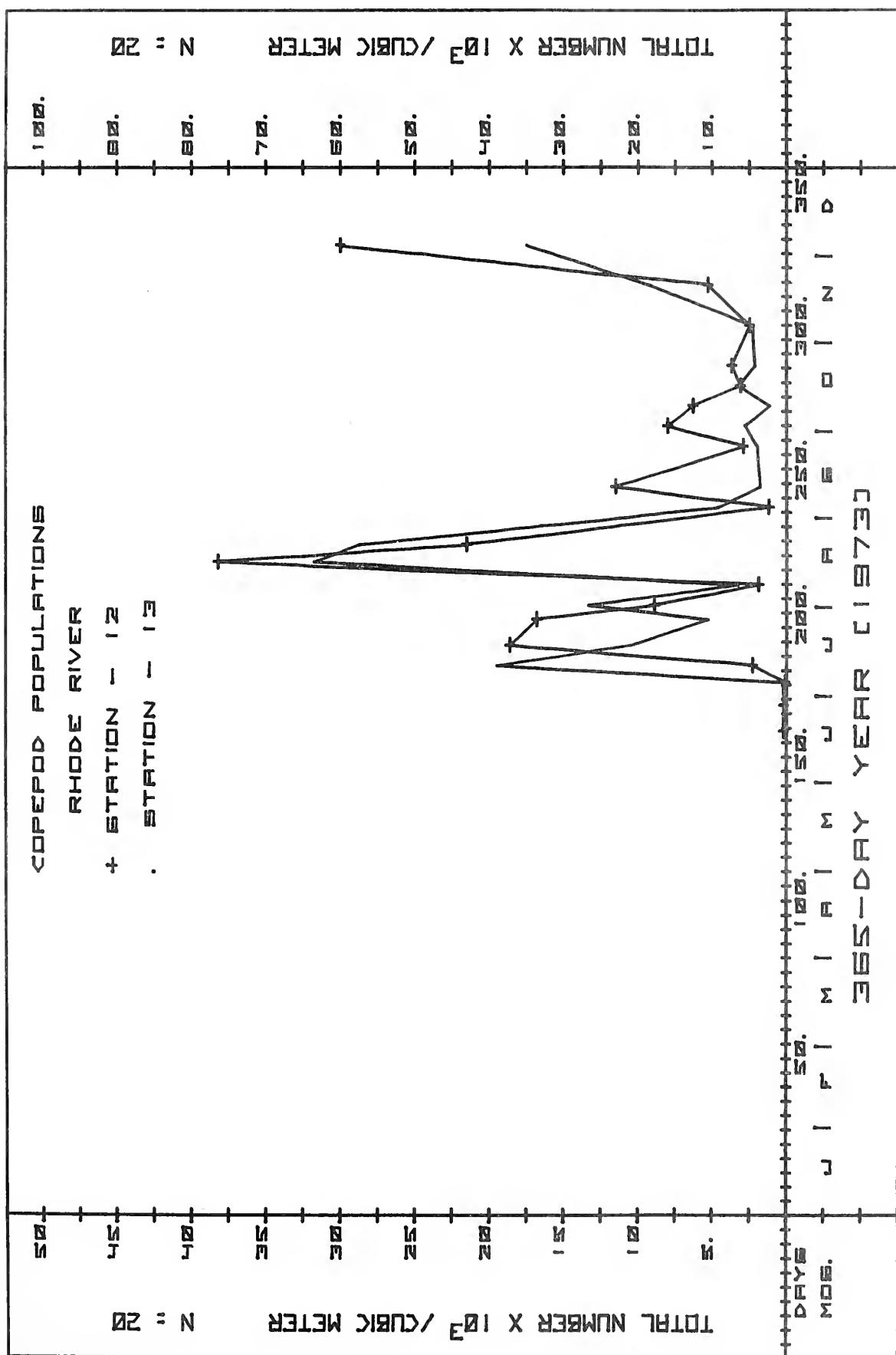
A= Adult; C= Copepodid Stage; N= Nauplius Stage

Day of Year	Station 9			Station 11			Station 12			Station 13		
				N	C	A	N	C	A	N	C	A
169	8	60	32	3	72	25	8	64	28	5	52	43
178	12	58	30	25	48	27	52	34	14	26	64	10
186	2	64	34	5	79	16	11	82	7	6	86	8
192	66	24	10	75	15	10	66	26	8	65	27	8
199	64	18	18	66	24	10	64	19	17	54	12	34
208	78	12	10	74	17	9	78	12	10	73	11	16
213	70	24	6	78	17	5	70	14	6	78	17	5
220	96	3	1	94	6	0	96	3	1	97	2	1
228	92	7	1	84	9	7	92	7	1	72	23	5
234	94	4	2	78	10	12	92	5	3	92	5	3
247	95	0	5	75	12	13	94	0	5	97	3	0
254	64	26	10	97	3	0	67	24	9	77	14	9
268	97	3	0	85	11	4	97	3	0	92	5	3
275	73	16	11	86	8	6	73	16	11	88	9	13
Mean for Summer	80	7	13	83	12	5	81	13	6	78	12	10

Table Copepod Populations in Rhode River, 1973

Day of Year	Total number $\times 10^3$ per cubic meter			
	Station 9	Station 11	Station 12	Station 13
169	2.6	0.3	0.2	0.2
178	0.1	0.2	0.2	0.3
186	0.3	0.5	0.1	0.6
192	5.3	1.8	2.3	38.9
199	5.2	7.2	18.6	21.0
208	9.6	23.2	16.8	10.6
213	8.4	14.2	8.9	26.6
220	1.0	1.2	1.9	6.6
228	1.1	1.1	38.2	63.5
234	16.5	5.5	21.5	57.5
247	2.0	1.0	1.2	9.3
254	13.0	11.9	11.5	3.6
268	13.6	6.6	2.9	4.0
275	7.4	4.5	8.0	5.6
282	24.7	2.7	6.3	2.3
289	38.0	2.3	3.1	6.5
296	10.8	4.2	3.7	4.3
310	3.3	0.6	2.5	4.6
324	4.3	-	5.3	18.5
338	10.3	13.2	30.0	35.0
360	11.7	-	-	-





### Planktonic Ciliate and Dinoflagellate Populations.

Technique: Samples were taken with a special peristaltic pump and were passed through a gravity flow cascade of nitex filters (80 um, 35 um, 20 um, and 15 um). The organisms remaining on each filter were resuspended in 10 ml of filtered water from the sampling site and were then preserved with at least two volumes of Bouin's fixation. Ciliate counts were made with a microscope using the sedimentation chamber method. Dinoflagellate counts were made with a Sedgwick-Rafter counting cell. In both cases scanning the chamber and counting individual cells was accomplished as described by J. W. G. Lund, C. Kipling and E. D. Lebran (1958), Hydrobiologia 11; 143-170. Confidence Limits were obtained as described by Lund, et. al. Ciliate biomass was determined by measuring 100 Protargol - stained cells of each size and shape class, calculation of the volume and assumption of a density of 1.1.

Principal Investigator: Eugene B. Small, Zoology Department, University of Maryland College Park, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Average Volume per cell and wet weight per cell for various classes of ciliates and for the dinoflagellate *Gymnodinium nelsoni*.

Ciliate Class	Average volume/cell ( $\mu^3$ )	Average wet weight/cell (g)
oligotrichs	$1.52 \times 10^3$	$1.67 \times 10^{-9}$
large scuticociliates	$1.71 \times 10^3$	$1.88 \times 10^{-9}$
small scuticociliates	$1.14 \times 10^3$	$1.25 \times 10^{-9}$
Tintinnid #1	$1.23 \times 10^4$	$1.35 \times 10^{-8}$
Tintinnid #2	$1.50 \times 10^4$	$1.65 \times 10^{-8}$
Tintinnid #4	$1.64 \times 10^3$	$1.80 \times 10^{-9}$
other species of ciliates	$1.58 \times 10^4$	$1.74 \times 10^{-8}$
dinoflagellate <u>G. nelsoni</u>	$2.30 \times 10^4$	$2.54 \times 10^{-8}$

Table Planktonic Ciliate and Dinoflagellate Populations - 1973

Day of Year	Depth (ft)	No. Ciliates per lit.	95% Confidence Limits	Approx. Biomass (wet wt. in ug/lit.)	% Ciliates feeding on bacteria	% Ciliates feeding on microalgae and bacteria	No. Dinoflagellates per liter	95% Confidence Limits	Approx. Biomass (wet wt. in ug/lit.)
<u>Station 10, Map 2</u>									
193	1.0	3,861	3,383	4,403	9.07	64.0	34.7	70,373	68,304 72,516 1,780
302	1.0	603	500	728	2.96	33.6	46.1	2,640	2,157 3,229 67.1
302	3.5	363	285	462	1.60	39.2	49.3	2,744	2,251 3,342 69.7
302	6.0	621	506	761	4.94	38.1	44.4	1,648	1,352 2,007 41.9
<u>Station 9, Map 2</u>									
304	2.0	192	126	290	0.86	33.3	58.3	3,720	3,020 4,579 94.5
<u>200 Meters South from RR Km 3.2</u>									
190	3.5	713	590	861	9.62	-	86.7	35,000	32,800 36,319 889.0
249	3.5	(Not Completed)					2,032	1,793	2,302 51.6
304	3.5	202	165	247	1.47	10.9	81.1	1,220	1,017 1,426 31.0
354	3.5	332	296	371	2.68	6.4	91.0	5,696	5,362 6,051 145.0

Table (Continued)

<u>Day of Year</u>	<u>Depth (ft)</u>	<u>No. Ciliates per lit.</u>	<u>95% Confidence Limits</u>	<u>Approx. Biomass (wet wt. in ug/lit.)</u>	<u>% Ciliates feeding on bacteria</u>	<u>% Ciliates feeding on microalgae and bacteria</u>	<u>No. Dinoflagellates per liter</u>	<u>95% Confidence Limits</u>	<u>Approx. Biomass (wet wt. in ug/lit.)</u>
<u>Sellman Creek</u>									
193	1.0	1,622	1,493	1,761	7.31	23.7	71.2	154,995	152,245
305	1.0	128	76	213	0.81	43.8	31.3	2,160	1,779
<u>Cadle Creek (Km 0.5)</u>									
192	1.0	610	575	652	4.50	18.9	79.7	3,869	3,685
192	3.5	1,773	1,643	1,907	9.85	35.5	62.8	48,105	46,641
192	7.0	299	258	347	3.57	-	86.1	11,720	11,463
303	1.0	197	144	268	1.91	32.6	39.5	2,168	1,763
303	3.5	160	126	204	1.39	1.4	88.6	229	144
303	6.0	96	47	190	0.59	33.3	55.5	-	-

Periphyton Community

Stations 5 and 8 (map 2)

Periphyton Experiments: Assays determined as described by Correll, D. L.; Faust, M. A. ; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

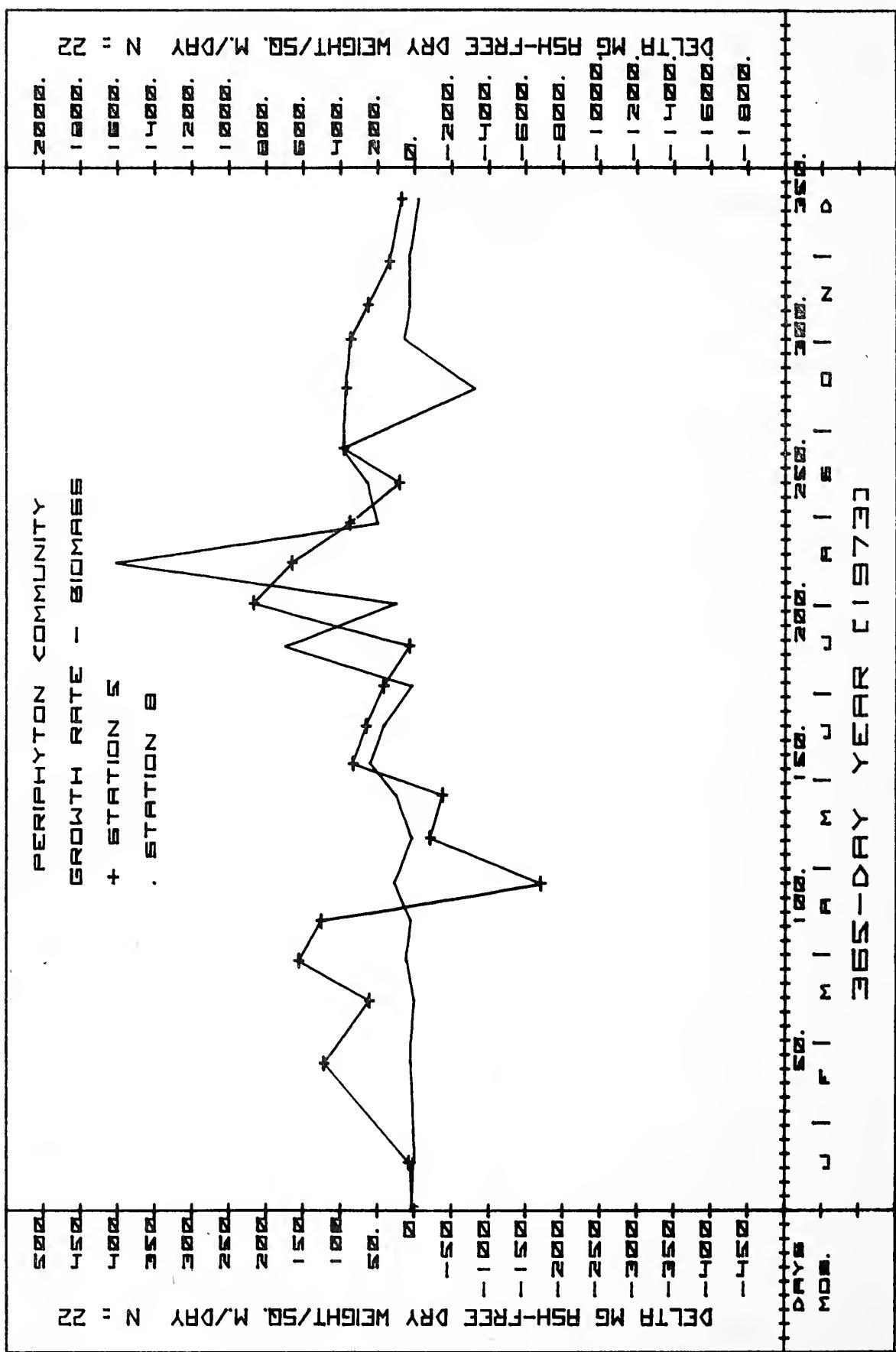
Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Periphyton Community

## Growth Rate (Biomass)

Delta mg Ash-Free Dry Wt./M<sup>2</sup>/Day

Day of 1973	Days in Increment	Station 5	Station 8
17	40	7.6	- <u>2.1</u>
52	29	122.0	21.3
74	16	61.2	2.1
88	12	156.0	43.2
102	15	126.0	20.4
115	12	<u>-170.0</u>	108.0
131	20	<u>-20.8</u>	14.9
146	9	<u>-37.8</u>	101.0
157	14	82.8	238.0
170	12	65.4	167.0
184	15	41.6	15.3
198	14	6.9	696.0
213	16	217.0	101.0
227	11	165.0	1608.0
241	17	87.4	202.0
255	11	20.8	256.0
267	20	95.8	392.0
288	21	92.2	<u>-324.0</u>
305	13	86.5	53.4
317	12	63.0	28.3
332	17	34.3	30.6
354	28	18.1	<u>-19.1</u>
		N=22	N=22



## Periphyton Community

Stations 5 and 8 (map 2)

Periphyton Experiments - Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D.J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press)

Chlorophyll - Assayed as described by Loftus, M. E.; Carpenter, J. H., 1971. "A Fluorometric Method for Determining Chlorophylls a, a<sub>s</sub>, and c", Journal of Marine Research, 29: 319 - 338.

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

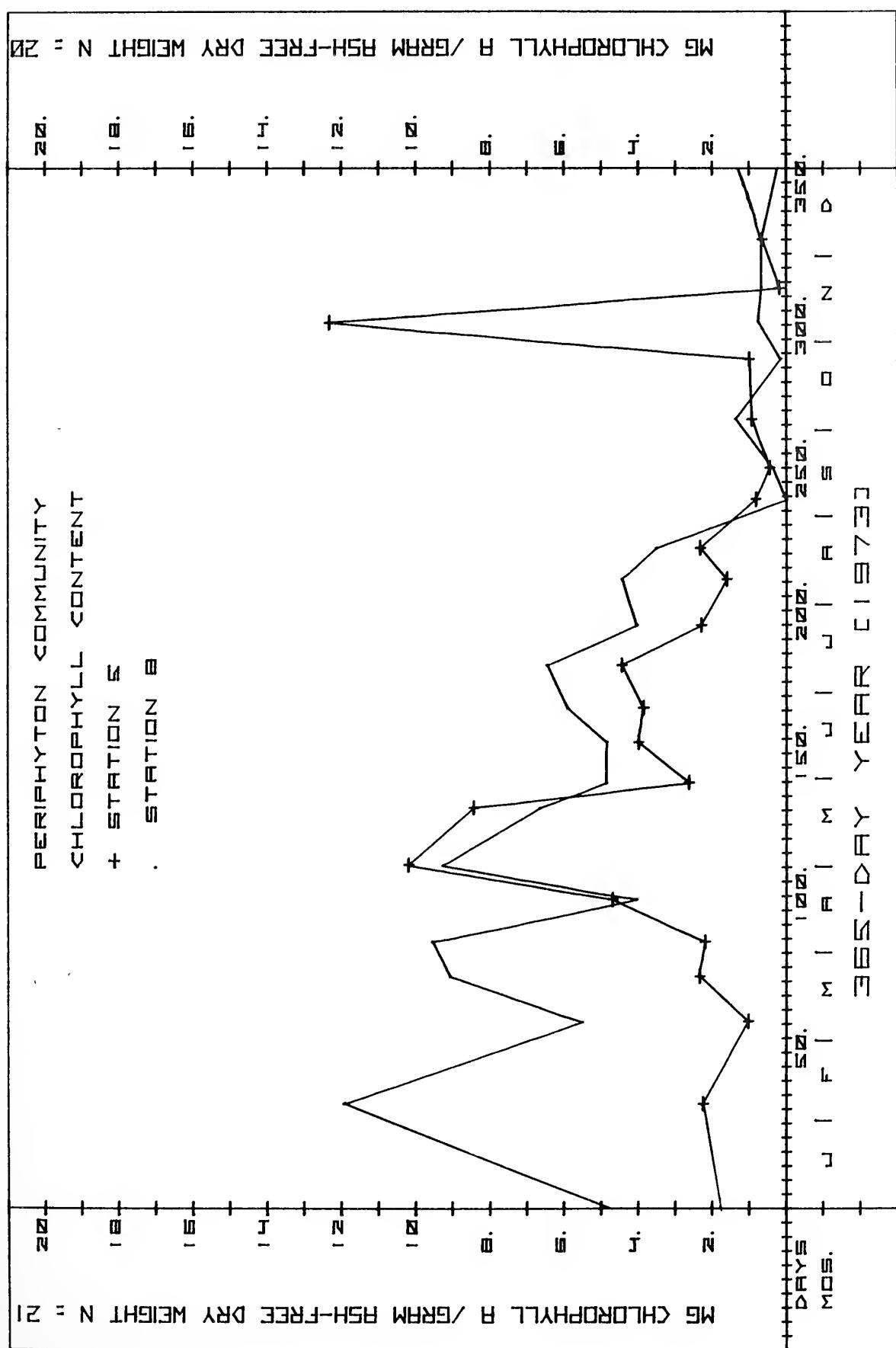
Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Periphyton Community

## Chlorophyll Content

(mg Chl. a / g Ash-Free Dry Wt.)

Day of 1973	Station 5	Station 8
37	2.25	11.93
66	1.03	5.53
82	2.35	9.07
94	2.20	9.54
109	4.70	4.06
121	10.19	9.26
141	8.43	6.66
150	2.63	4.87
164	3.99	4.85
176	3.86	5.90
191	4.45	6.45
205	2.30	4.05
221	1.61	4.45
232	2.33	3.52
249	0.83	0
260	0.45	0.38
277	0.94	1.37
298	1.00	-
311	12.32	0.16
323	0.19	0.76
340	0.66	0.68
	N=21	N=20



## Periphyton Community

Stations 5 and 8 (map 2)

Periphyton Experiments: Assays determined as described by Correll, D.L.; Faust, M.S.; Severn, D.J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

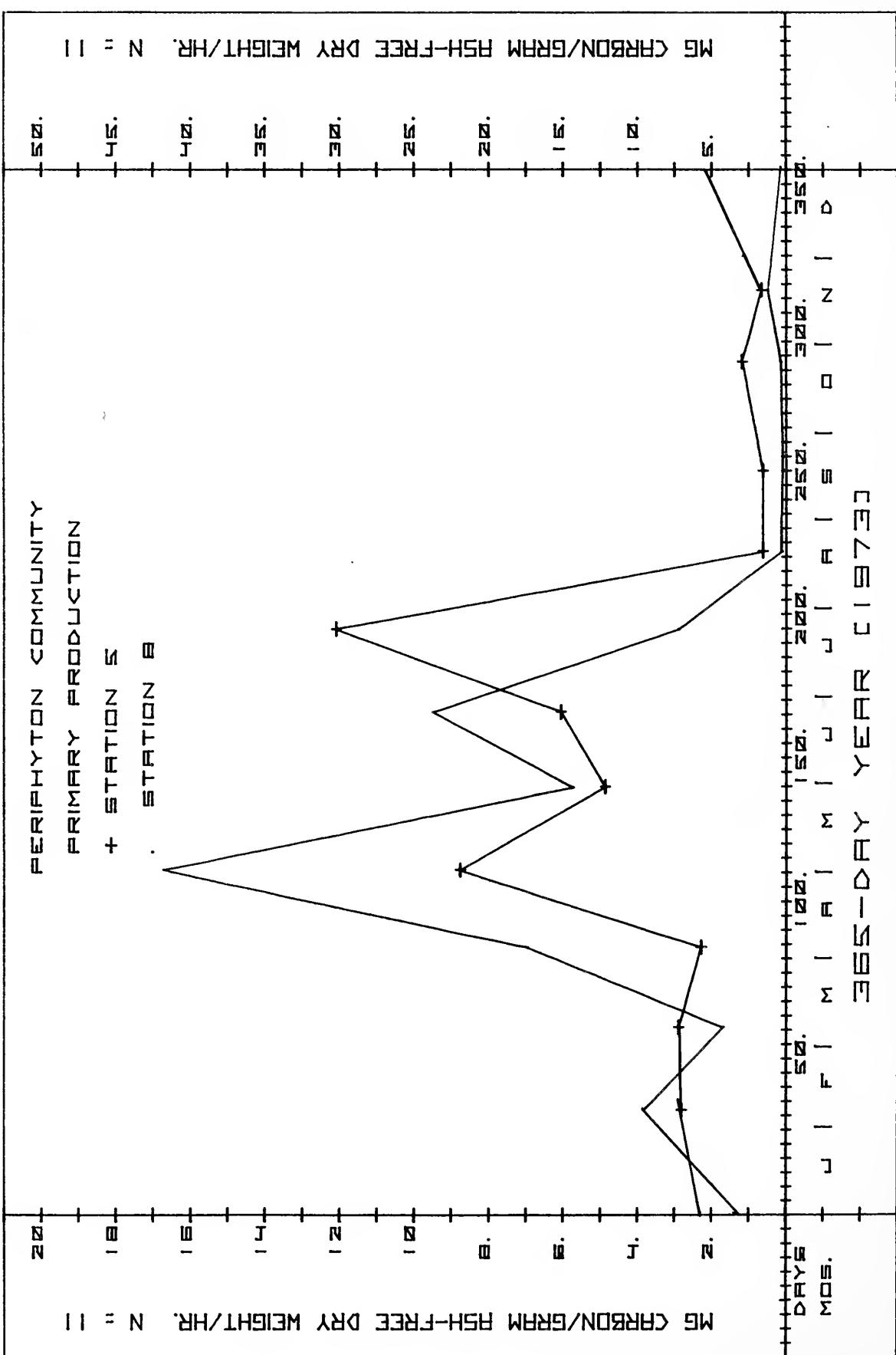
Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Periphyton Community

Primary Production (mg C/g Ash-Free Dry Wt./hr.)

<u>Day of 1973</u>	<u>Station 5</u>	<u>Station 8</u>
37	2.82	9.57
66	2.89	4.25
94	2.29	17.37
121	8.76	41.76
150	4.87	14.34
176	6.06	23.70
205	12.09	7.24
232	0.621	0.289
260	0.621	0.220
298	1.18	0.350
323	0.665	1.27
	N=11	N=11



Periphyton Community

Stations 5 and 8 (map 2)

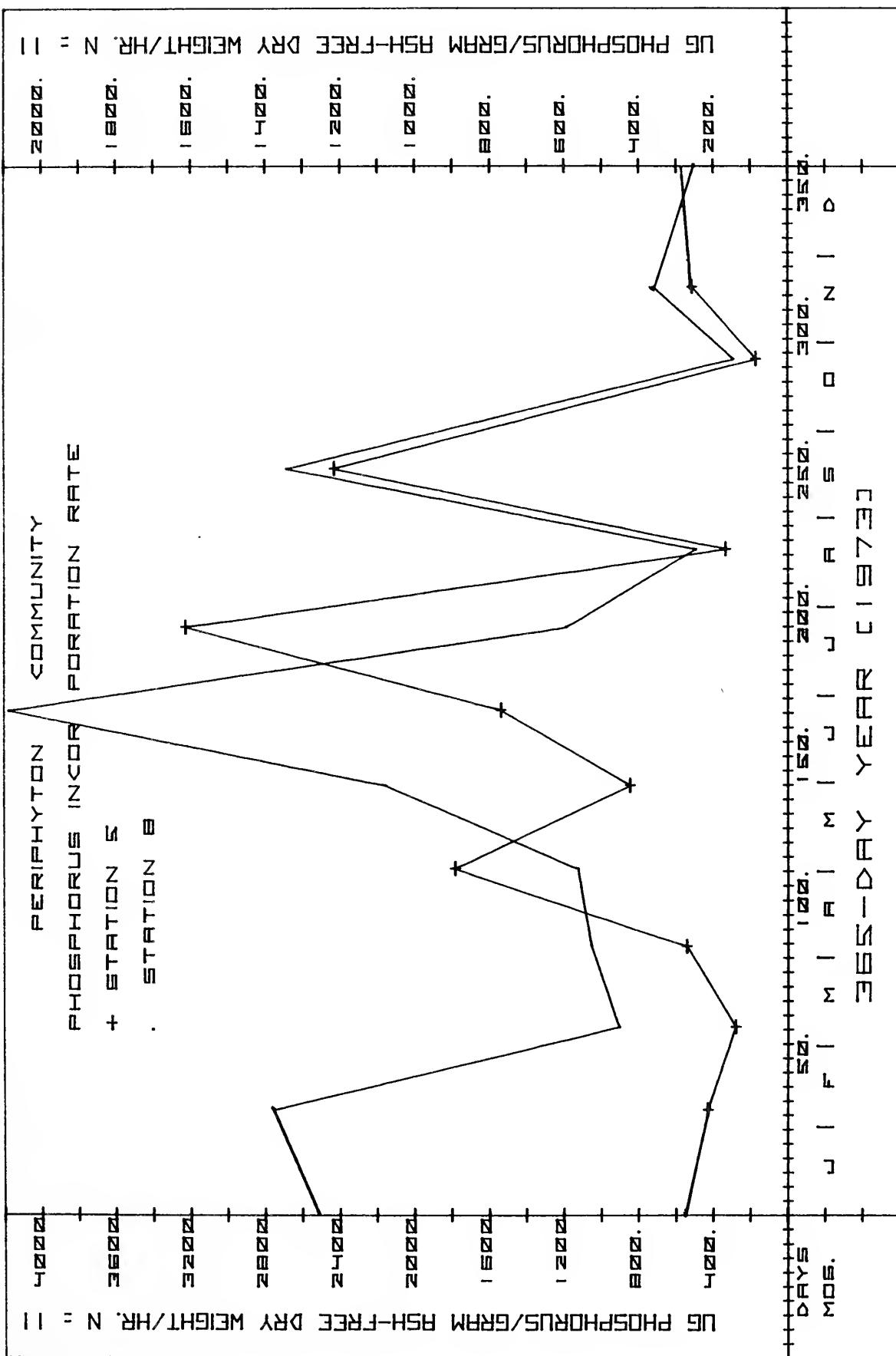
Periphyton Experiments: Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

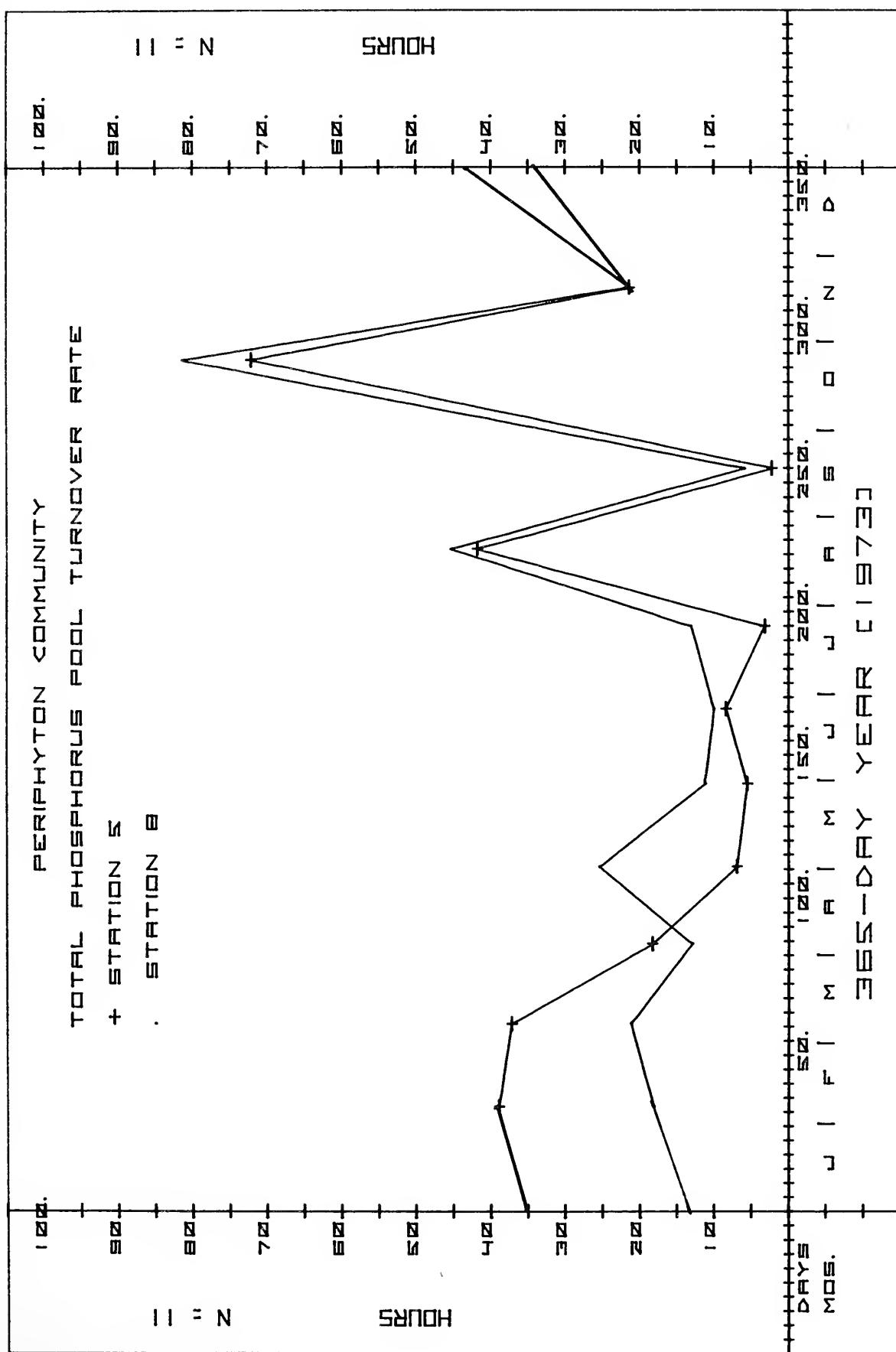
Periphyton Community  
 Phosphorus Incorporation Rate For Intracellular  
 Total Phosphorus Pool (ug/g Ash-Free Dry Wt./hr.)

<u>Day of 1973</u>	<u>Station 5</u>	<u>Station 8</u>
37	432	1377
66	280	453
94	543	528
121	1784	564
150	846	1078
176	1539	2088
205	3226	595
232	334	248
260	2432	1342
298	171	146
323	516	362
	N=11	N=11



Periphyton Community  
Total Phosphorus Pool Turnover Rate (Hours)

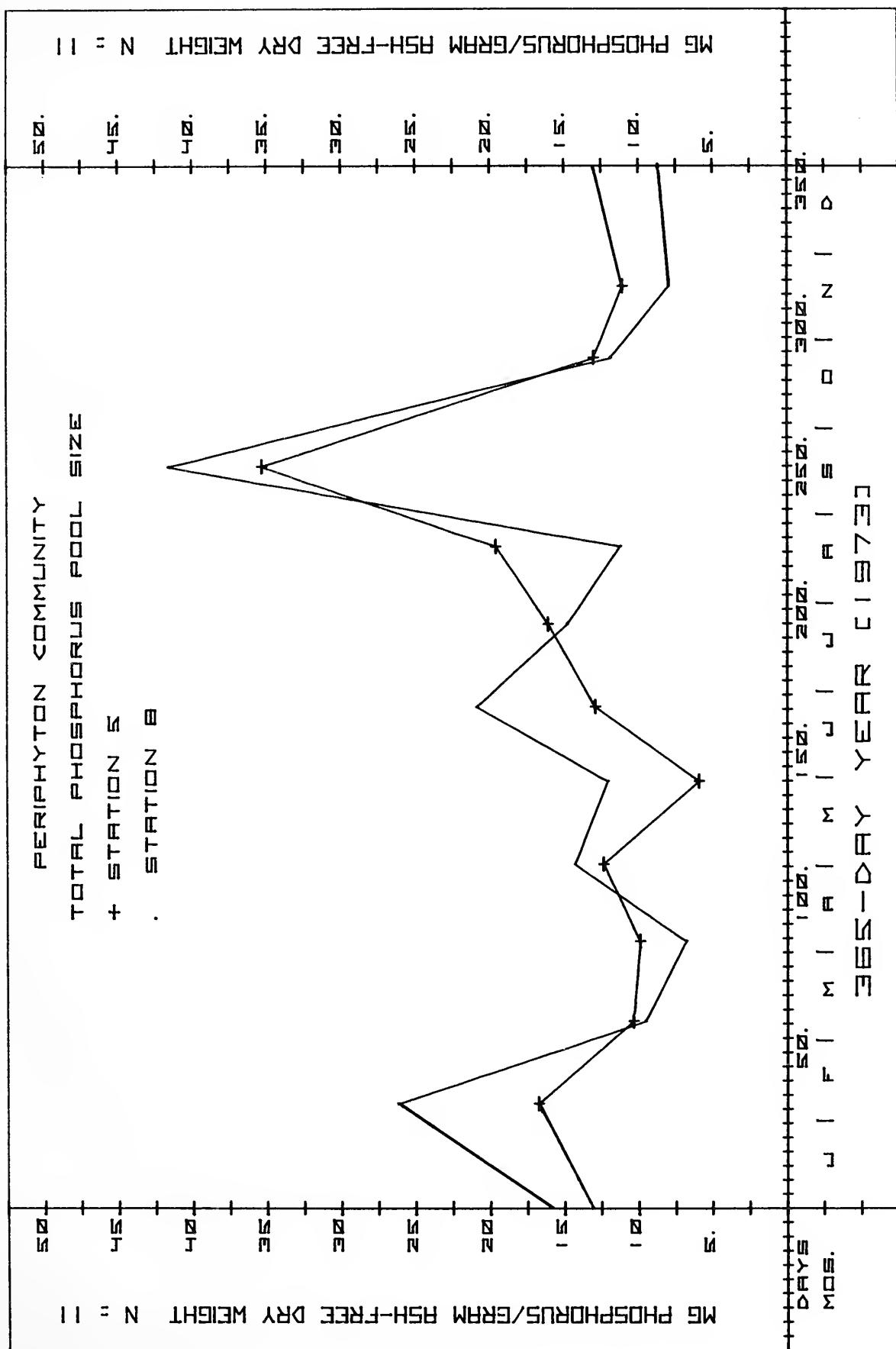
Day of 1973	Station 5	Station 8
37	38.9	18.1
66	37.2	21.2
94	18.3	12.9
121	6.9	25.4
150	5.5	11.2
176	8.4	10.0
205	3.2	13.1
232	41.8	45.3
260	2.2	5.9
298	72.1	81.3
323	21.4	22.0
	N=11	N=11



## Periphyton Community

Total Phosphorus Pool Size (Cellular) mg P/g Ash-Free Dry Wt.

<u>Day of 1973</u>	Station 5	Station 8
37	16.75	26.18
66	10.36	9.55
94	9.90	6.82
121	12.37	14.30
150	5.93	12.08
176	12.91	20.89
205	16.09	14.82
232	19.61	11.24
260	35.30	41.59
298	13.00	11.87
323	11.06	7.96
	N=11	N=11

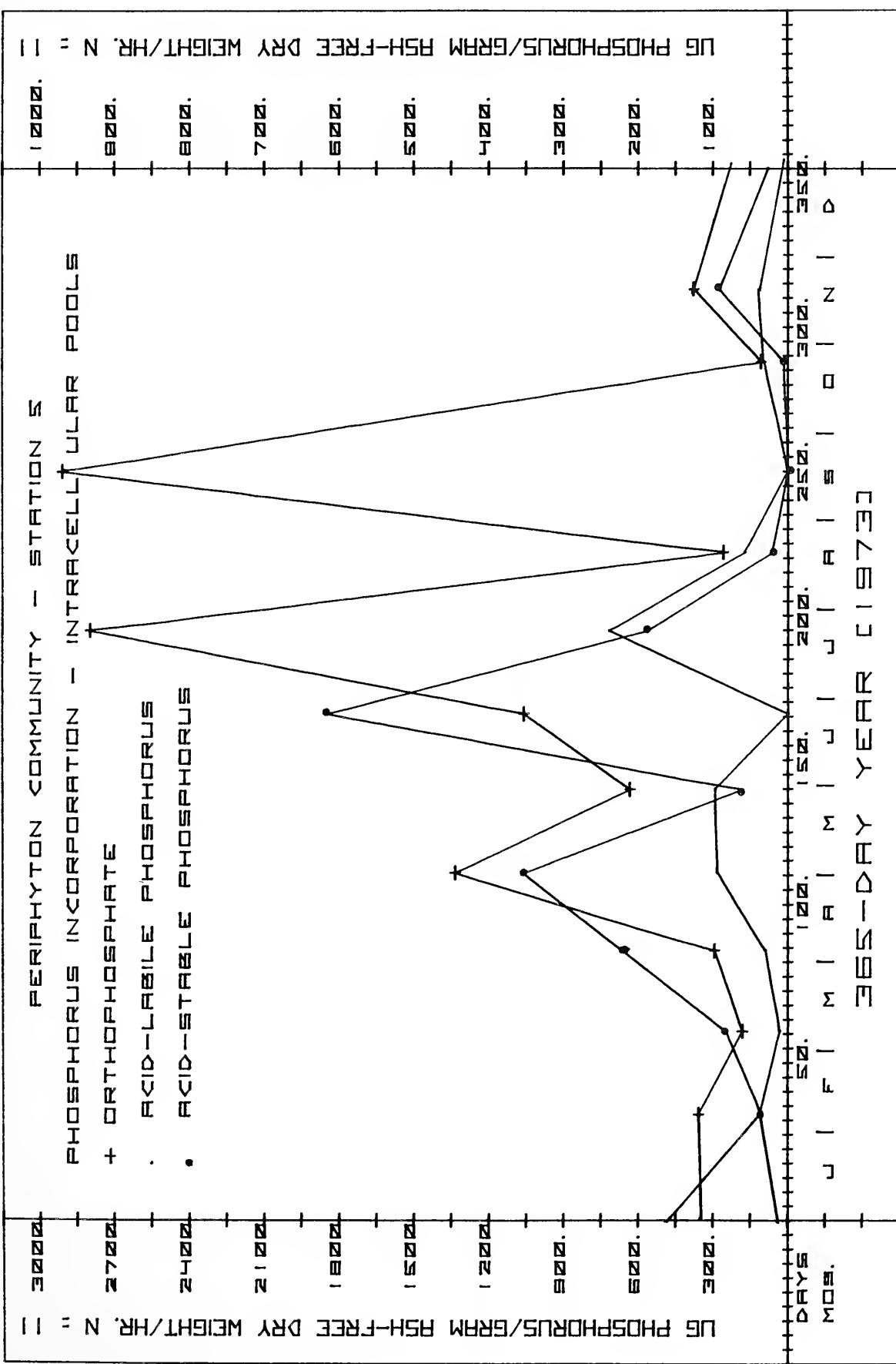


## Periphyton Community

Phosphorus Incorporation Rate For Intracellular Pools  
(ug P/g Ash-Free Dry Wt./hr.)

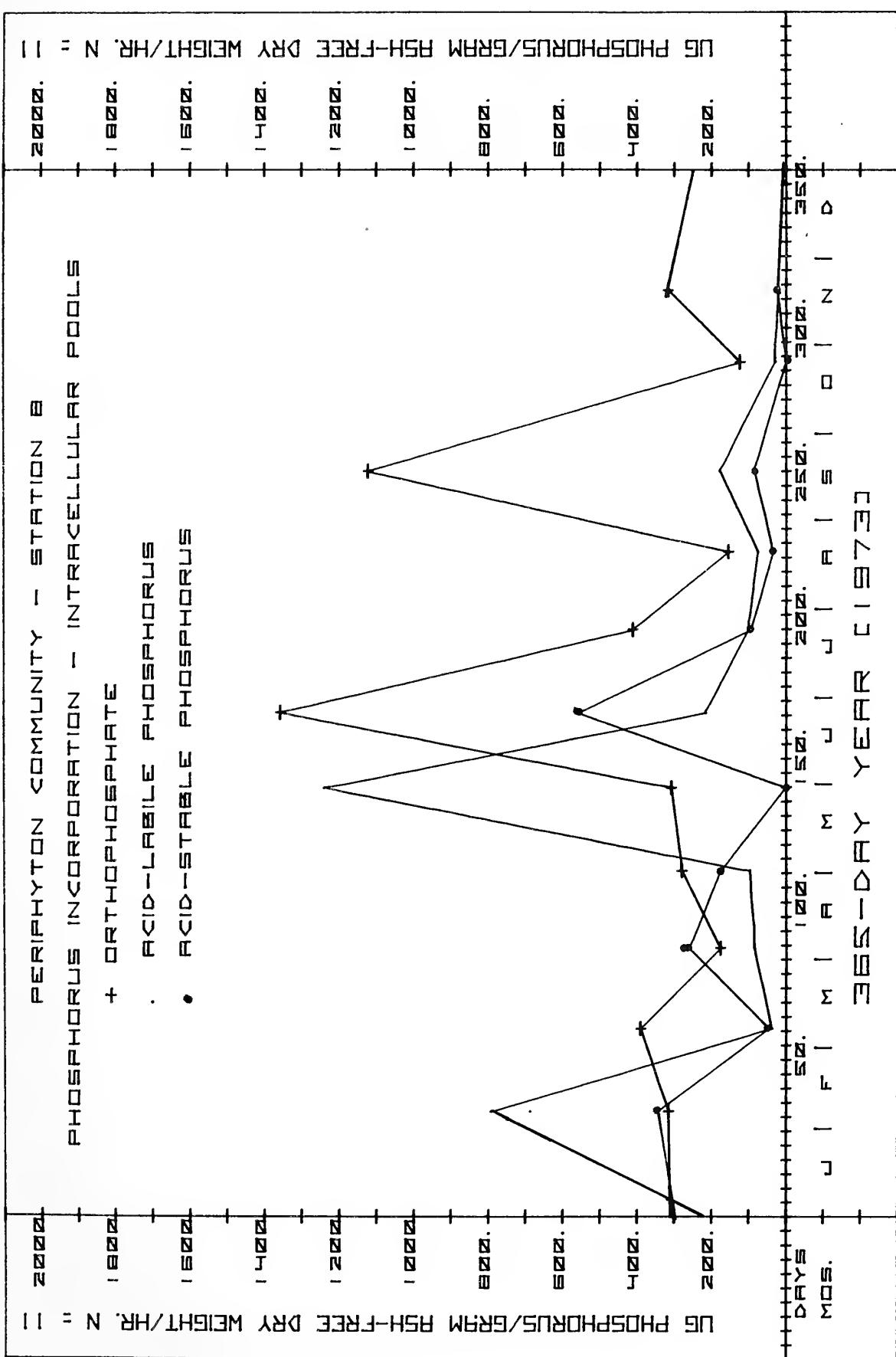
## Station 5

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	359.0	37.2	35.5
66	182.0	10.7	83.4
94	295.0	30.4	221.0
121	1335.0	94.3	355.0
150	635.0	98.3	61.5
176	1060.0	<u>-168.0</u>	616.0
205	2798.0	239.0	189.0
232	261.0	58.1	20.8
260	2910.0	<u>-271.0</u>	<u>-100.0</u>
298	107.0	32.6	5.9
323	379.0	40.5	92.5
	N=11	N=11	N=11



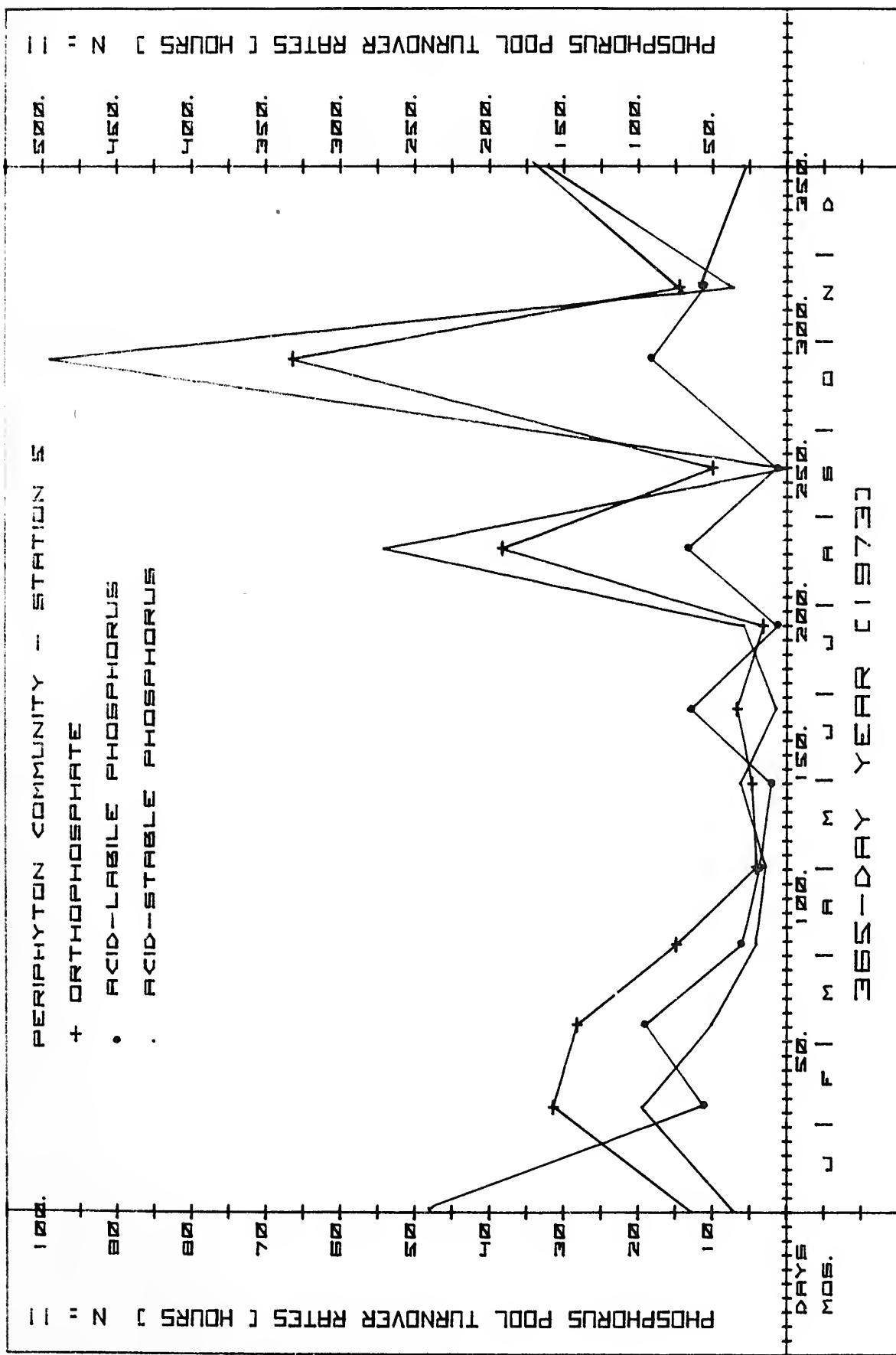
Periphyton Community  
 Phosphorus Incorporation Rate For Intracellular Pools  
 (ug P/g Ash-Free Dry Wt./hr.)  
 Station 8

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	316.0	792.0	344.0
66	391.0	38.3	45.6
94	176.0	86.0	260.0
121	281.0	98.8	176.0
150	309.0	1239.0	<u>-514.0</u>
176	1359.0	218.0	560.0
205	413.0	101.0	94.7
232	156.0	76.5	34.4
260	1123.0	179.0	87.0
298	124.0	29.7	<u>-10.0</u>
323	318.0	19.3	26.0
	N=11	N=11	N=11



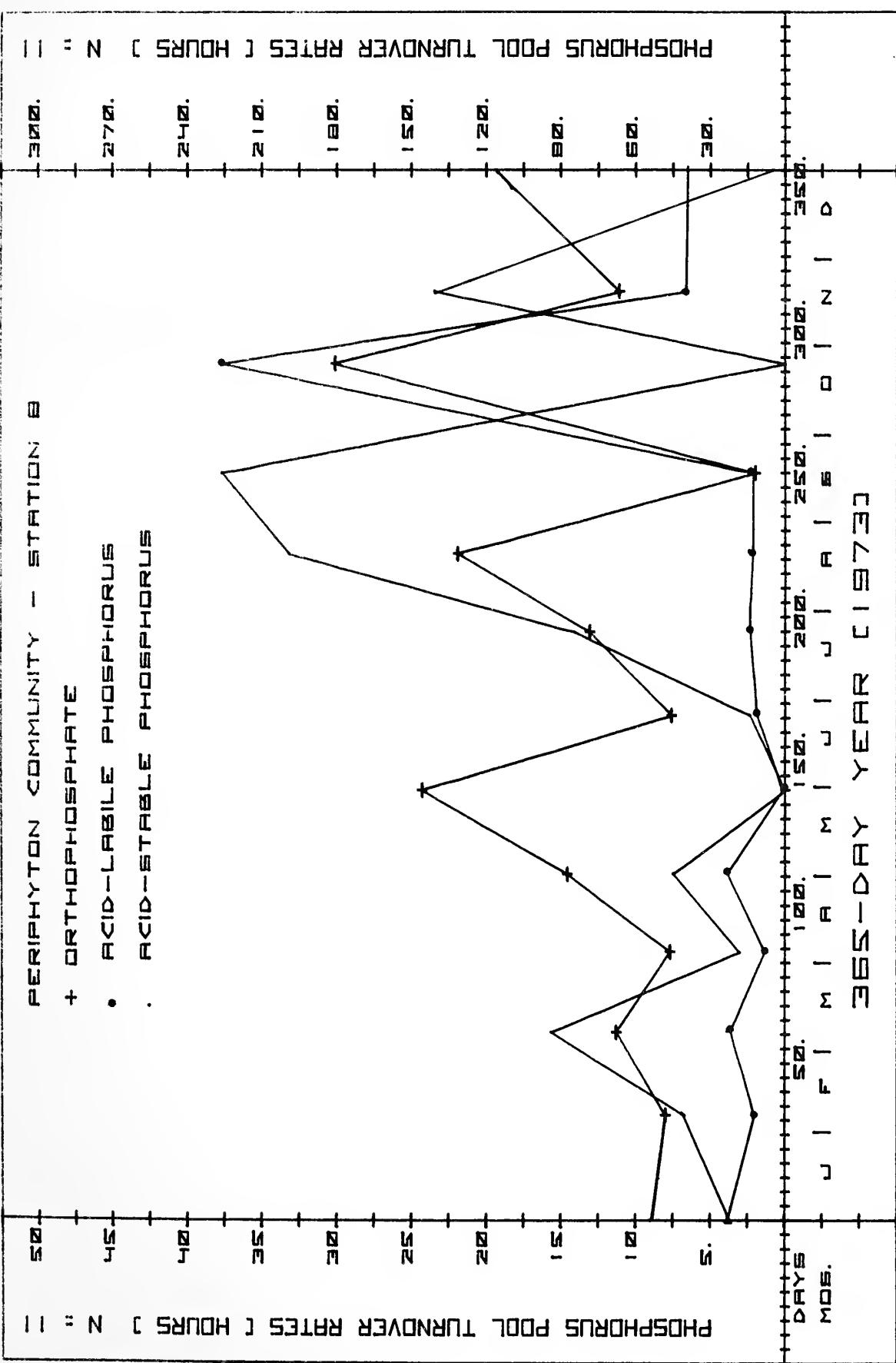
Periphyton Community  
 Phosphorus Pool Turnover Rates (Hours)  
 Station 5

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	31.40	55.3	97.2
66	28.20	95.3	50.7
94	14.90	30.2	20.8
121	4.10	18.0	14.5
150	4.70	10.4	31.4
176	6.70	64.8	7.5
205	3.20	6.4	29.5
232	38.30	67.3	271.0
260	10.00	7.0	<u>-80.7</u>
298	66.40	91.4	495.0
323	14.50	55.8	35.9
	N=11	N=11	N=11



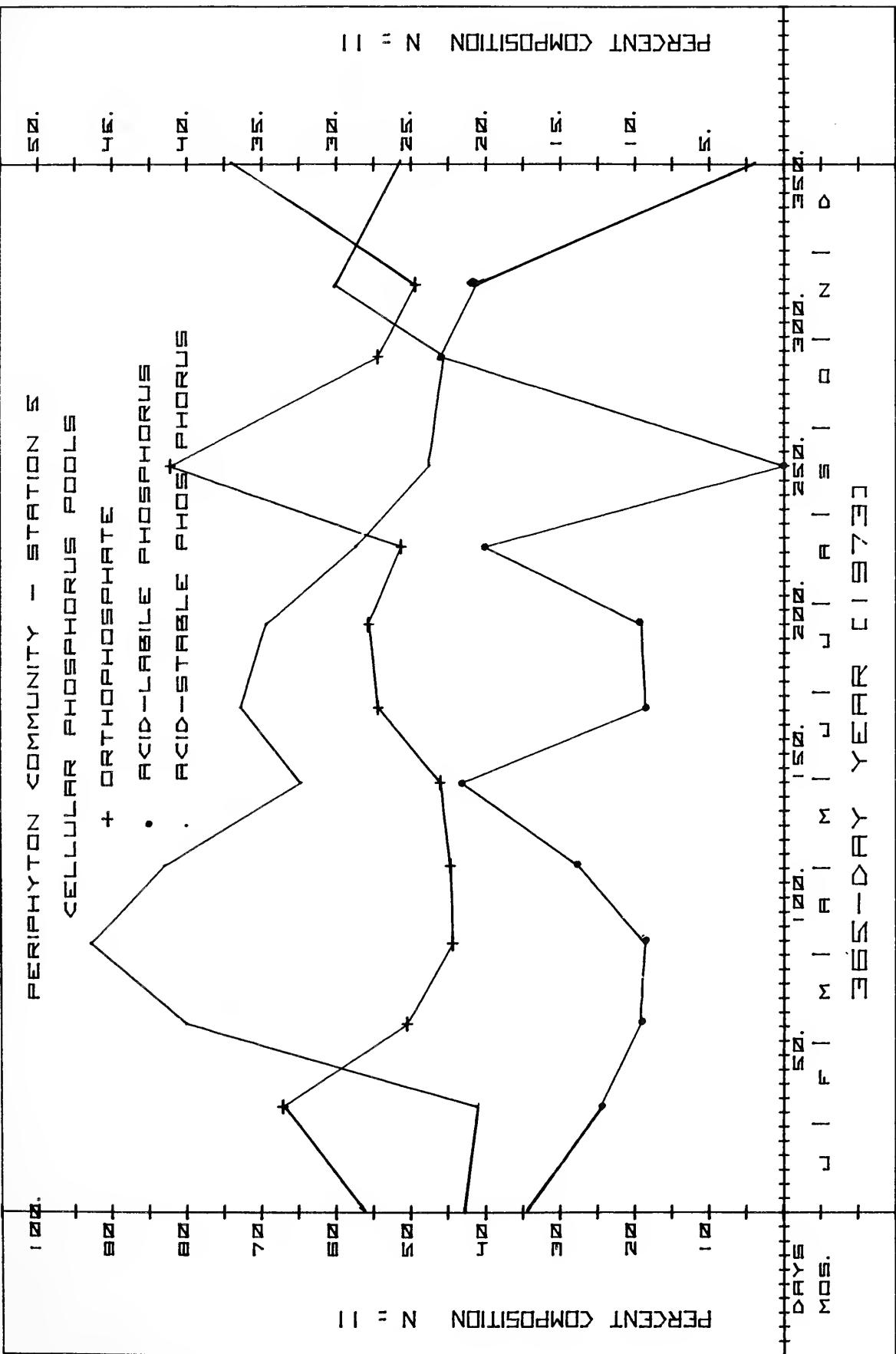
Periphyton Community  
 Phosphorus Pool Turnover Rates (Hours)  
 Station 8

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	8.0	12.2	40.6
66	11.3	21.9	94.0
94	7.7	8.1	18.3
121	14.6	23.2	45.0
150	24.3	0.95	<u>-6.6</u>
176	7.6	11.4	14.3
205	13.1	14.1	84.4
232	21.9	12.8	199.0
260	2.0	12.7	226.0
298	30.1	226.0	<u>-670.0</u>
323	11.1	39.9	140.0
	N=11	N=11	N=11



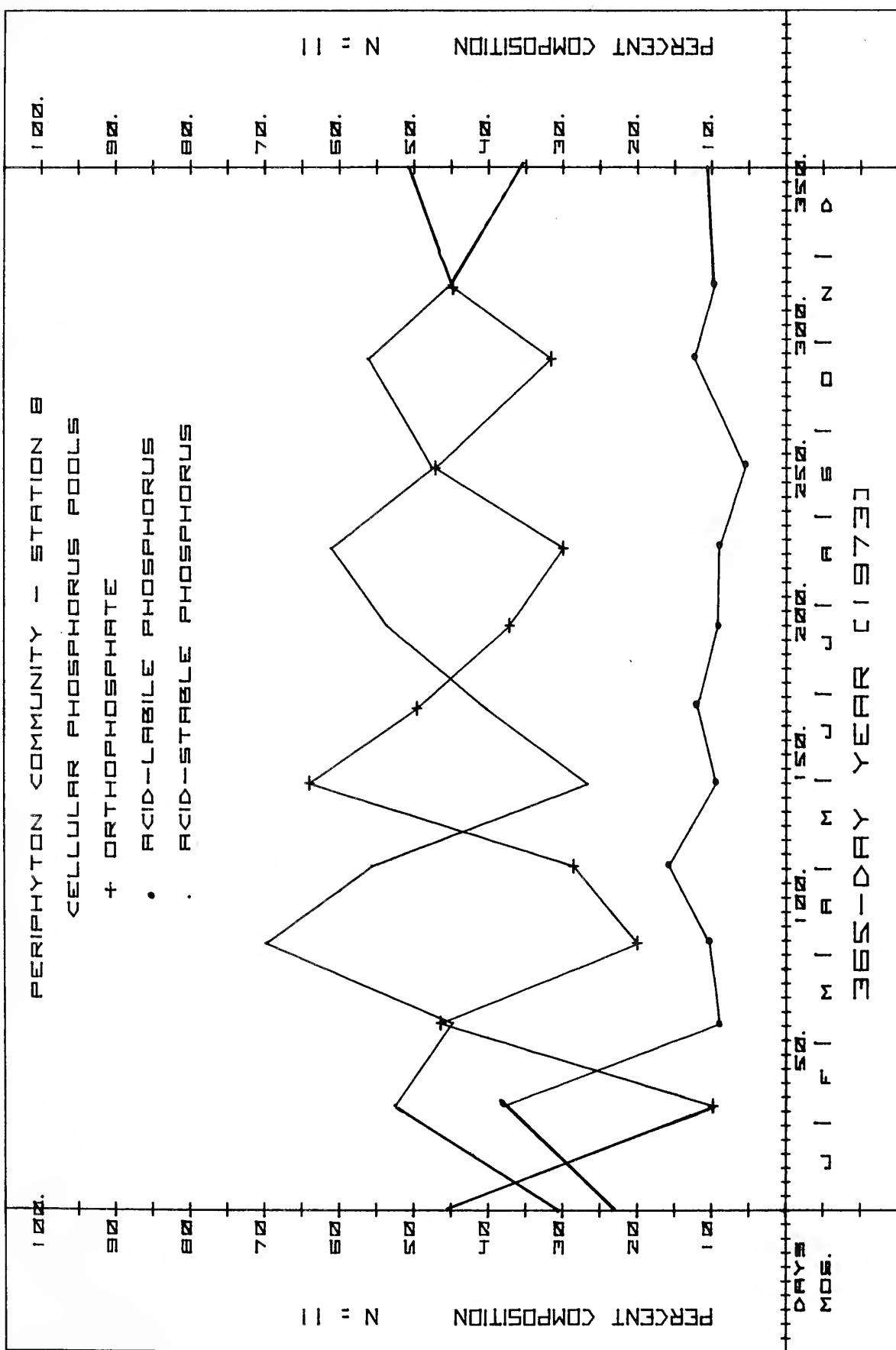
Periphyton Community  
 % Composition (Cellular P-Pools)  
 Station 5

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	67.2	12.3	20.6
66	50.5	9.6	40.0
94	44.4	9.3	46.4
121	44.7	13.8	41.5
150	46.1	21.6	32.4
176	54.4	9.3	36.4
205	55.7	9.6	34.7
232	51.3	20.1	28.7
260	82.2	<u>-6.0</u>	23.8
298	54.4	23.0	22.8
323	49.4	20.6	30.1
	N=11	N=11	N=11



Periphyton Community  
 % Composition (Cellular P-Pools)  
 Station 8

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	9.8	37.9	52.4
66	46.4	8.9	44.8
94	20.0	10.3	69.8
121	28.6	15.8	55.6
150	64.0	9.4	26.7
176	49.6	12.0	40.3
205	37.2	9.2	53.6
232	30.0	9.0	61.1
260	47.1	5.5	47.5
298	31.6	12.4	56.1
323	44.8	9.7	45.6
	N=11	N=11	N=11

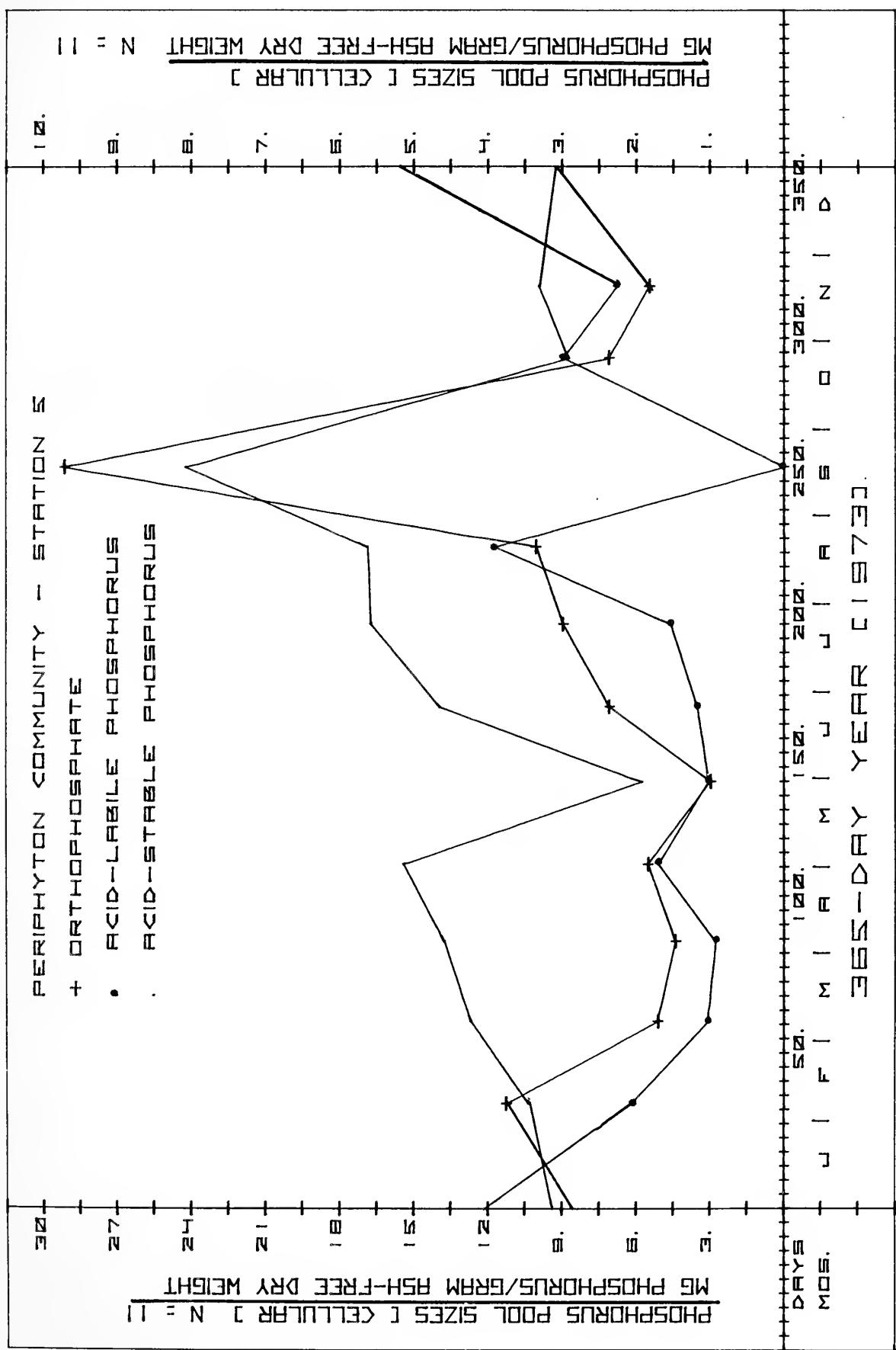


## Periphyton Community

Phosphorus Pool Sizes (Cellular) mg P/g Ash-Free Dry Wt.

Station 5

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	11.25	2.06	3.45
66	5.11	1.02	4.23
94	4.39	0.92	4.59
121	5.53	1.70	5.14
150	2.98	1.02	1.93
176	7.09	1.18	4.65
205	8.97	1.54	5.58
232	10.07	3.91	5.63
260	29.13	0	8.07
298	7.10	2.98	2.92
323	5.48	2.26	3.32
	N=11	N=11	N=11

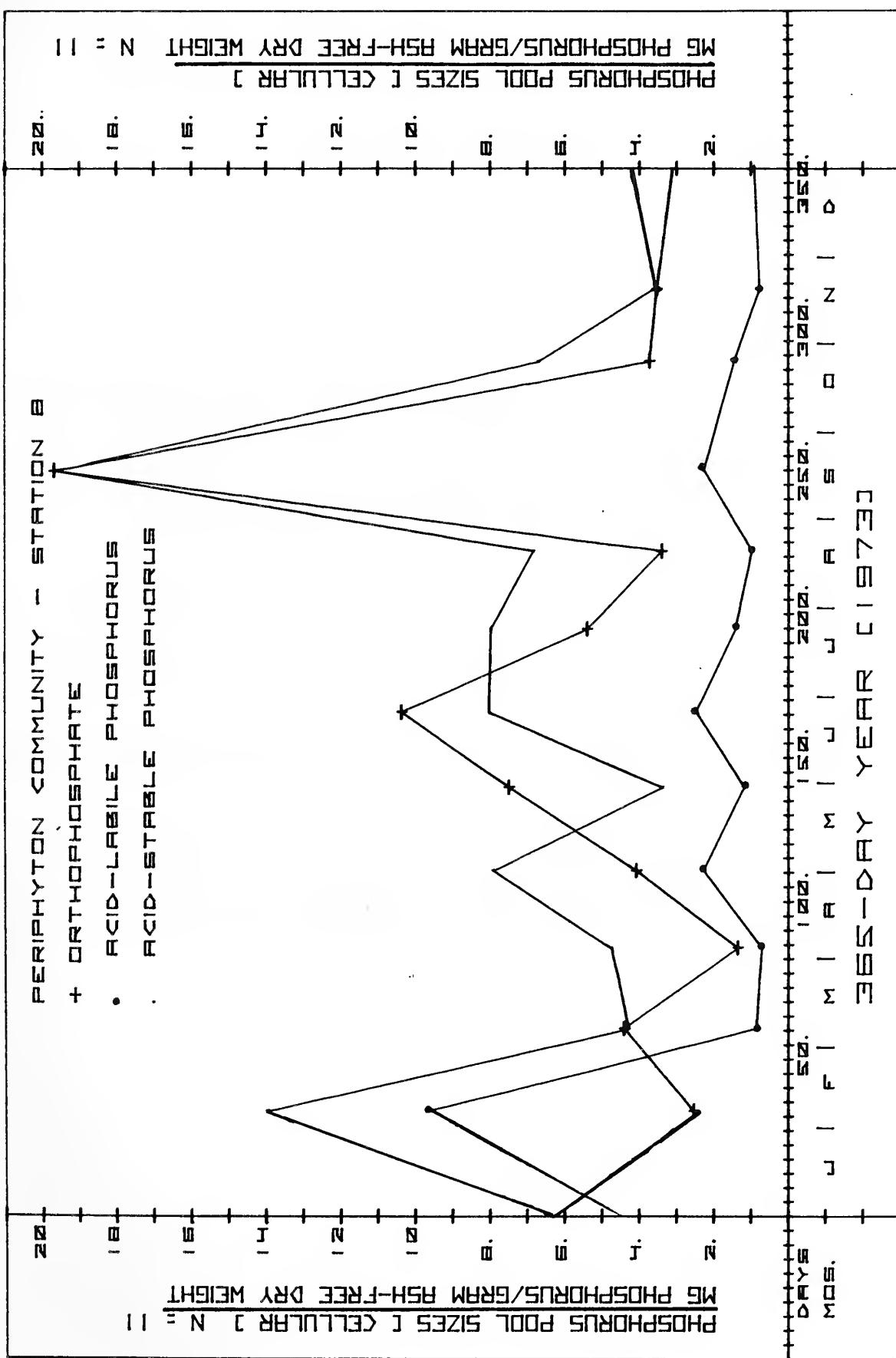


## Periphyton Community

Phosphorus Pool Sizes (Cellular) mg P/g Ash-Free Dry Wt.

Station 8

Day of 1973	Orthophosphate	Acid-Labile Phosphorus	Acid-Stable Phosphorus
37	2.54	9.68	13.96
66	4.42	0.84	4.29
94	1.36	0.70	4.76
121	4.09	2.29	7.92
150	7.50	1.18	3.40
176	10.37	2.49	8.03
205	5.41	1.42	7.99
232	3.41	0.98	6.85
260	19.68	2.28	19.64
298	3.73	1.45	6.70
323	3.54	0.77	3.65
	N=11	N=11	N=11



## Periphyton Community

Stations 5 and 8 (map 2)

Periphyton Experiments: Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries", in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Chlorophyll - Assayed as described by Loftus, M. E.; Carpenter, J. H., 1971. "A Fluorometric Method for Determining Chlorophylls a, b, and c", Journal of Marine Research, 29: 319 - 338.

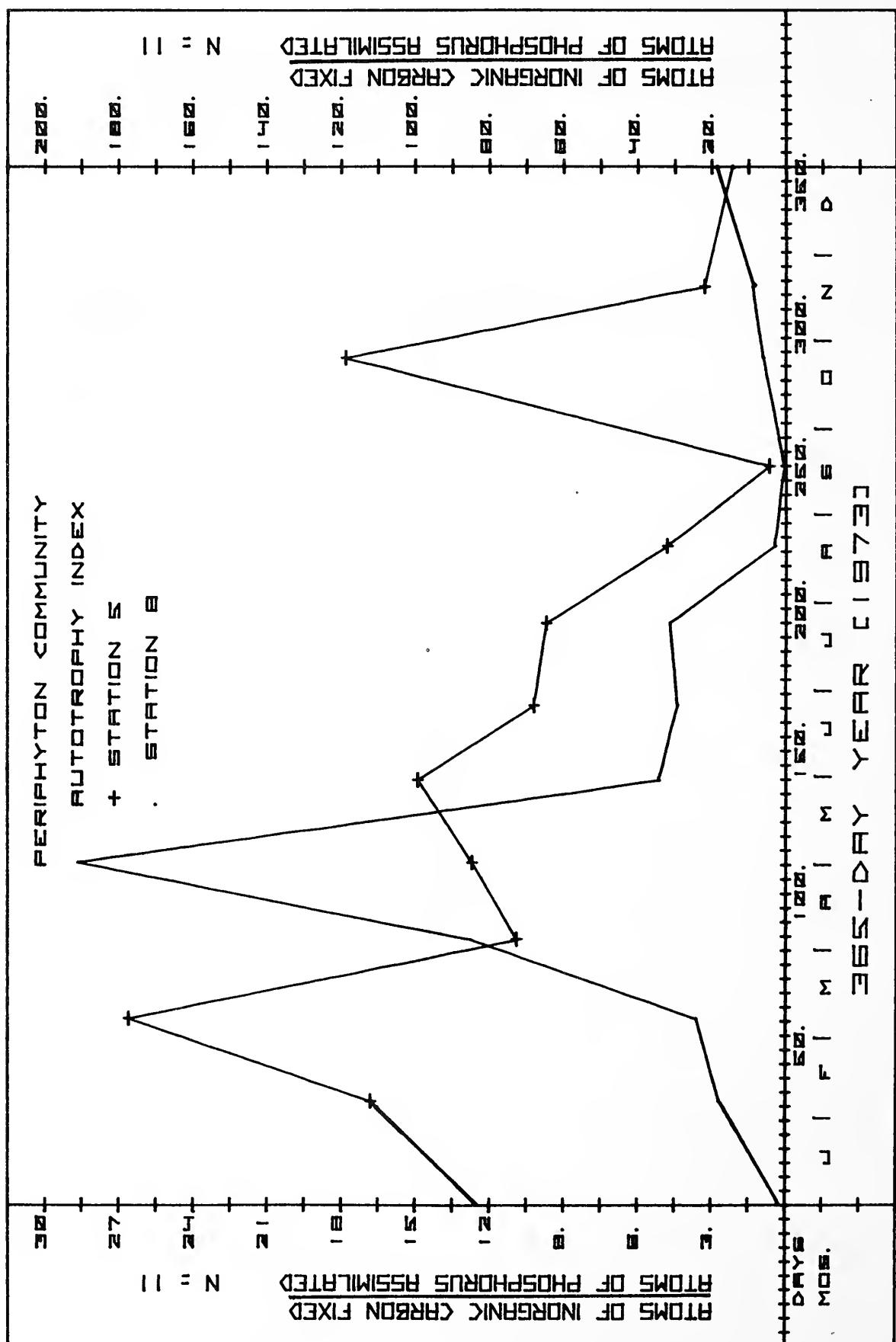
Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

## Periphyton Community

Autotrophy Index -  $\frac{\text{Atoms of Inorganic Carbon Fixed}}{\text{Atoms of Phosphorus Assimilated}}$

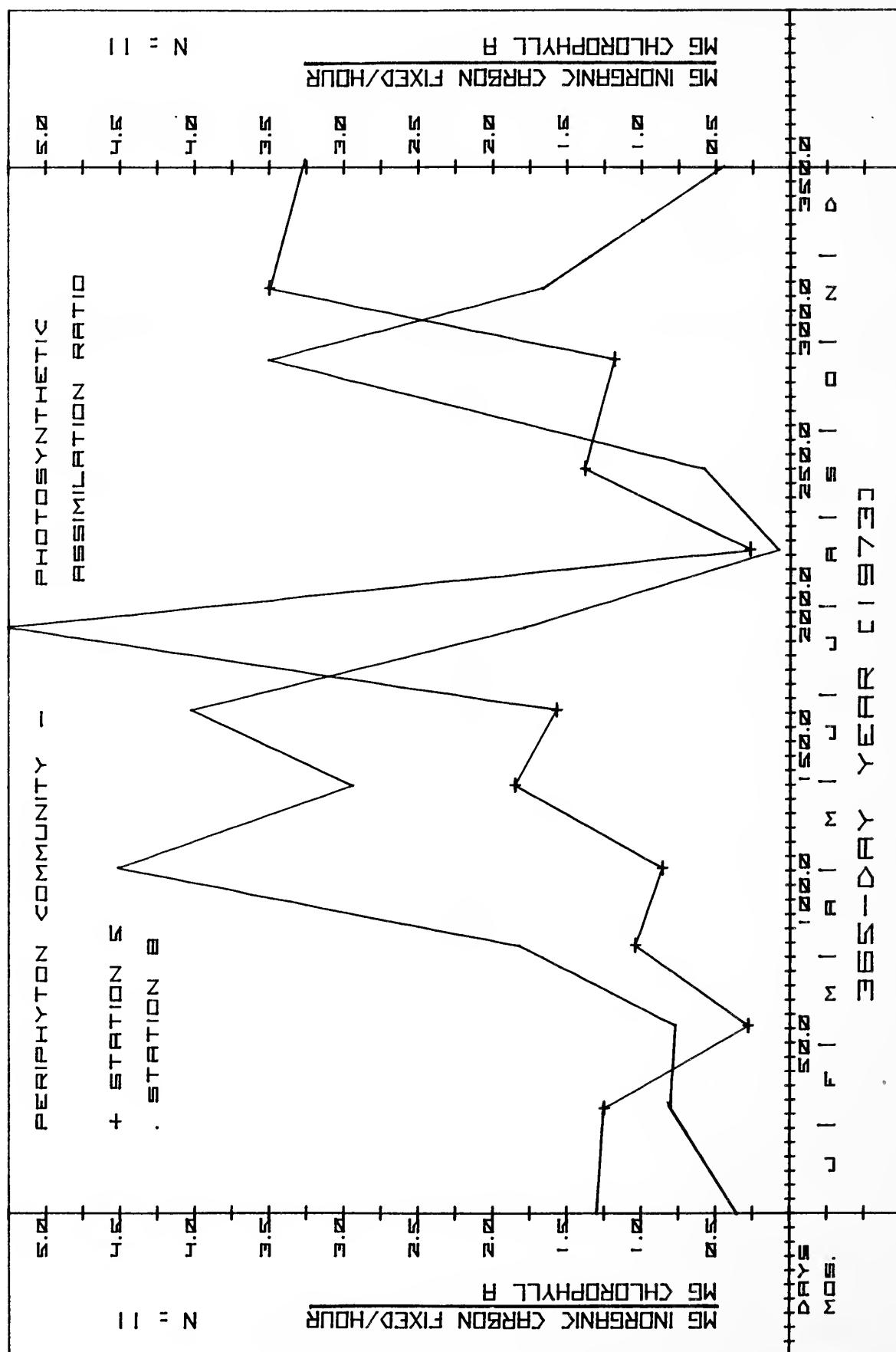
Day of 1973	Station 5	Station 8
37	16.8	17.9
66	26.6	24.2
94	10.9	84.9
121	12.7	191.0
150	14.9	34.3
176	10.2	29.3
205	9.7	31.4
232	4.8	3.0
260	0.66	0.42
298	17.8	6.2
323	3.3	9.1
	N=11	N=11



## Periphyton Community

Photosynthetic Assimilation Ratio - mg Inorganic Carbon Fixed/hr.  
mg Chlorophyll a

Day of 1973	Station 5	Station 8
37	1.25	0.80
66	0.28	0.77
94	1.04	1.82
121	0.86	4.51
150	1.85	2.94
176	1.57	4.02
205	5.26	1.79
232	0.27	0.08
260	1.38	0.58
298	1.18	3.50
323	3.50	1.67
	N=11	N=11



## Trace Metals in Animals

Technique: All Biological samples were digested in concentrated nitric acid and 30% hydrogen peroxide. They were then analyzed on a Perkin-Elmer, model 303, atomic absorption spectrometer.

Principal Investigator: John M. Frazier, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Trace Metals in Animals of Rhode River

(ug metal/g dry wt) Range of values is given in parenthesis.

Day of 1973	N	Average Weight	Average Length	Anchoa mitchilli	Mn	Fe	Zn	Cu	Cd
130	22	0.76 (0.15-2.03)	4.7 (3.1-6.6)	2.85 (1.61-4.75)	36.9 (10.8-126)	28.6 (24.3-32.3)	0.51 (0.31-0.86)	0.06 (0.01-0.11)	
151	10	1.50 (0.68-2.32)	5.3 (4.4-6.0)	6.93 (4.61-8.43)	42.0 (27.2-54.6)	25.2 (18.5-30.4)	0.57 (0.49-0.79)	0.07 (0.04-0.15)	
165	4	1.14 (0.67-1.94)	5.0 (4.2-6.0)	2.26 (2.02-2.53)	43.1 (22.6-69.5)	22.0 (13.9-28.2)	0.55 (0.44-0.73)	0.05 (0.03-0.07)	
				Menidia menidia					
170	8	7.18 (4.2-12.3)	9.8 (8.7-11.8)	2.37 (0.58-7.25)	29.3 (15.5-52.0)	21.2 (12.9-26.6)	0.91 (0.66-1.26)	0.12 (0.04-0.29)	
				Fundulus heteroclitus					
165	9 (males)	2.97 (1.91-7.48)	5.7 (5.0-7.7)	8.61 (4.21-15.0)	86.4 (43.4-189)	40.2 (28.7-69.2)	2.05 (1.46-2.79)	0.06 (0.02-0.16)	
165	14	4.69 (2.02-7.50)	6.5 (5.1-7.9)	11.9 (6.57-22.5)	84.1 (47.7-164)	38.2 (30.5-51.2)	2.34 (0.97-3.76)	0.06 (0.03-0.13)	

## Trace Metals in Animals

(ug metal/g soft tissue dry wt  $\pm$  one standard deviation of the mean)

Day of 1973	Crassostrea virginica						Cn Zn Cu Cd			
	Mn	Fe	RR Km 4.0	Cu	Cd	Mn	Fe	CC Km 0.9	Cu	Cd
23 *	3.09 $\pm$ 0.16	205 $\pm$ 11	1950 $\pm$ 250	56.6 $\pm$ 9.4	4.96 $\pm$ 0.18					
57	2.72 $\pm$ 0.12	231 $\pm$ 14	2500 $\pm$ 260	69.2 $\pm$ 9.6	6.85 $\pm$ 0.50					
87	3.34 $\pm$ 0.31	281 $\pm$ 15	3040 $\pm$ 200	102 $\pm$ 16	8.64 $\pm$ 0.48					
128	15.3 $\pm$ 0.8	203 $\pm$ 23	2480 $\pm$ 140	53.6 $\pm$ 6.6	6.74 $\pm$ 0.52					
158	8.42 $\pm$ 2.05	229 $\pm$ 15	2200 $\pm$ 220	50.3 $\pm$ 4.6	6.45 $\pm$ 0.41					
32 **	4.89 $\pm$ 0.73	227 $\pm$ 9	1850 $\pm$ 204	60.0 $\pm$ 8.2	3.00 $\pm$ 0.16	2.93 $\pm$ 0.46	243 $\pm$ 22	3720 $\pm$ 350	404 $\pm$ 31	5.17 $\pm$ 0.43
67	3.91 $\pm$ 0.52	238 $\pm$ 10	1740 $\pm$ 200	63.7 $\pm$ 10.7	3.48 $\pm$ 0.25	2.32 $\pm$ 0.37	219 $\pm$ 11	4410 $\pm$ 170	467 $\pm$ 24	6.17 $\pm$ 0.21
96	4.67 $\pm$ 0.62	308 $\pm$ 16	2580 $\pm$ 270	100 $\pm$ 18	5.54 $\pm$ 0.25	3.92 $\pm$ 0.36	342 $\pm$ 30	5180 $\pm$ 310	511 $\pm$ 28	6.33 $\pm$ 0.45
128	12.8 $\pm$ 1.9	324 $\pm$ 22	1800 $\pm$ 390	43.0 $\pm$ 5.7	4.99 $\pm$ 0.23	13.4 $\pm$ 1.3	351 $\pm$ 27	5120 $\pm$ 220	456 $\pm$ 30	5.64 $\pm$ 0.22

(continued)

Day of 1973	Crassostrea virginica							
	Mn	Fe	RR Km 4.0	Cu	Cd	Mn	Fe	Zn
		Zn				Fe	Zn	Cu
158	17.0 ± 2.7	260 ± 11	1610 ± 130	44.7 ± 3.8	4.20 ± 0.38	-	-	-
212 **	38.4 ± 5.6	476 ± 39	4970 ± 580	285 ± 30	6.41 ± 0.71	-	-	-
250	31.4 ± 5.3	652 ± 57	5470 ± 440	207 ± 27	6.51 ± 0.49	34.8 ± 3.6	366 ± 18	4410 ± 390
288	30.7 ± 4.3	362 ± 18	1710 ± 160	64.2 ± 8.2	1.83 ± 0.10	18.2 ± 2.2	561 ± 32	4100 ± 320
319	10.2 ± 0.9	196 ± 8	1860 ± 110	66.2 ± 4.8	2.41 ± 0.19	9.39± 0.69	269 ± 15	3320 ± 230
362	8.82 ± 1.28	184 ± 10	1940 ± 160	80.9 ± 8.4	2.78 ± 0.15	8.09 ± 1.20	228 ± 7	4510 ± 330
								244 ± 18
								3.28 ± 0.25

\* Stock number one.

\*\* Stock number two.

\*\*\* Stock number three.

## Oyster Growth Rates

Technique: Stocks of genetically uniform young oysters (*Crassostrea virginica*) were set in holding cages. These were suspended from boat docks and subsamples were sacrificed at intervals.

Principal Investigator: John M. Frazier, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Maryland.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Oyster Growth Rates\*  
 (RR Km 4.0)

Day of 1973	Shell Length (mm)	Shell Width (mm)	Shell Weight (g)	Soft Tissue Fresh Wt. (g)	Dry Wt. (g)
23**	51.8 ± 1.4	39.2 ± 0.5	12.0 ± 0.42	2.76 ± 0.21	0.537 ± 0.039
57	48.4 ± 1.5	41.4 ± 1.1	12.3 ± 0.58	2.58 ± 0.16	0.542 ± 0.032
87	48.5 ± 1.6	39.8 ± 1.3	13.0 ± 0.92	2.51 ± 0.16	0.490 ± 0.023
128	50.9 ± 1.3	39.6 ± 0.4	13.7 ± 0.44	2.88 ± 0.21	0.572 ± 0.045
32***	46.3 ± 1.6	34.2 ± 1.0	6.64 ± 0.44	2.67 ± 0.21	0.434 ± 0.043
67	47.6 ± 1.7	35.6 ± 1.4	6.84 ± 0.44	2.30 ± 0.19	0.420 ± 0.034
96	42.9 ± 1.6	33.3 ± 1.0	6.28 ± 0.51	1.82 ± 0.23	0.345 ± 0.040
128	45.4 ± 1.0	34.3 ± 0.9	7.02 ± 0.32	2.06 ± 0.14	0.391 ± 0.024
158	46.7 ± 2.5	35.6 ± 1.3	8.88 ± 0.76	2.38 ± 0.27	0.531 ± 0.064.
178	34.9 ± 1.5	26.5 ± 1.5	-	1.30 ± 0.14	0.202 ± 0.020
215	36.4 ± 1.4	26.5 ± 1.2	-	1.09 ± 0.06	0.192 ± 0.030
250	34.8 ± 1.1	2.70 ± 0.9	-	0.93 ± 0.08	0.178 ± 0.015
270	39.6 ± 1.2	30.9 ± 1.1	-	1.14 ± 0.08	0.216 ± 0.015
304	43.1 ± 1.5	33.1 ± 0.9	-	1.78 ± 0.14	0.379 ± 0.030

Table (continued)

Day of 1973	Shell Length (mm)	Shell Width (mm)	Shell Weight (g)	Soft Tissue Fresh Wt. (g)	Soft Tissue Dry Wt. (g)
332	43.1 ± 1.4	33.4 ± 1.2	-	1.98 ± 0.21	0.400 ± 0.151
361	45.7 ± 1.4	34.2 ± 1.1	-	2.18 ± 0.19	0.426 ± 0.040
212***	38.5 ± 0.8	32.3 ± 1.1	5.32 ± 0.29	1.60 ± 0.16	0.301 ± 0.035
250	41.2 ± 1.3	33.5 ± 1.4	5.95 ± 0.37	1.40 ± 0.12	0.192 ± 0.015
288	49.3 ± 1.1	39.3 ± 1.1	8.30 ± 0.39	2.83 ± 0.21	0.635 ± 0.047
319	56.2 ± 1.5	44.2 ± 1.1	11.31 ± 0.57	3.69 ± 0.28	0.872 ± 0.064
362	54.1 ± 1.5	45.3 ± 1.5	11.23 ± 0.52	4.16 ± 0.38	-

\* Values are + one standard deviation of the mean.

\*\* Stock number one.

\*\*\* Stock number two.

\*\*\*\* Stock number three

## Nitrogen Fixation

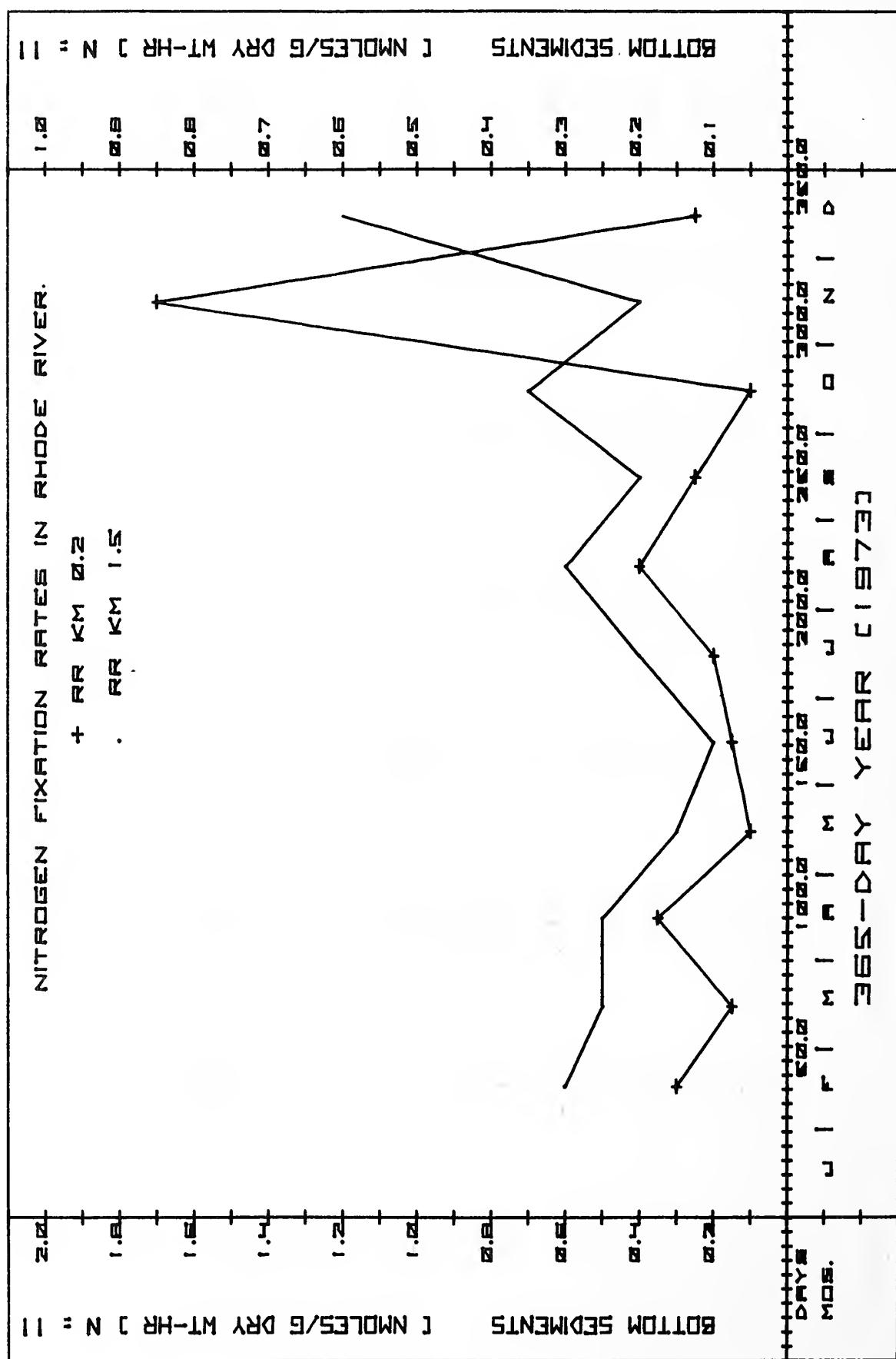
Technique: Indirect acetylene reduction method. Samples are placed in an atmosphere of argon, oxygen, and carbon dioxide. Acetylene is injected and the sample is incubated at 20° or ambient. The gas phase is then analyzed for newly formed ethylene by gas chromatography.

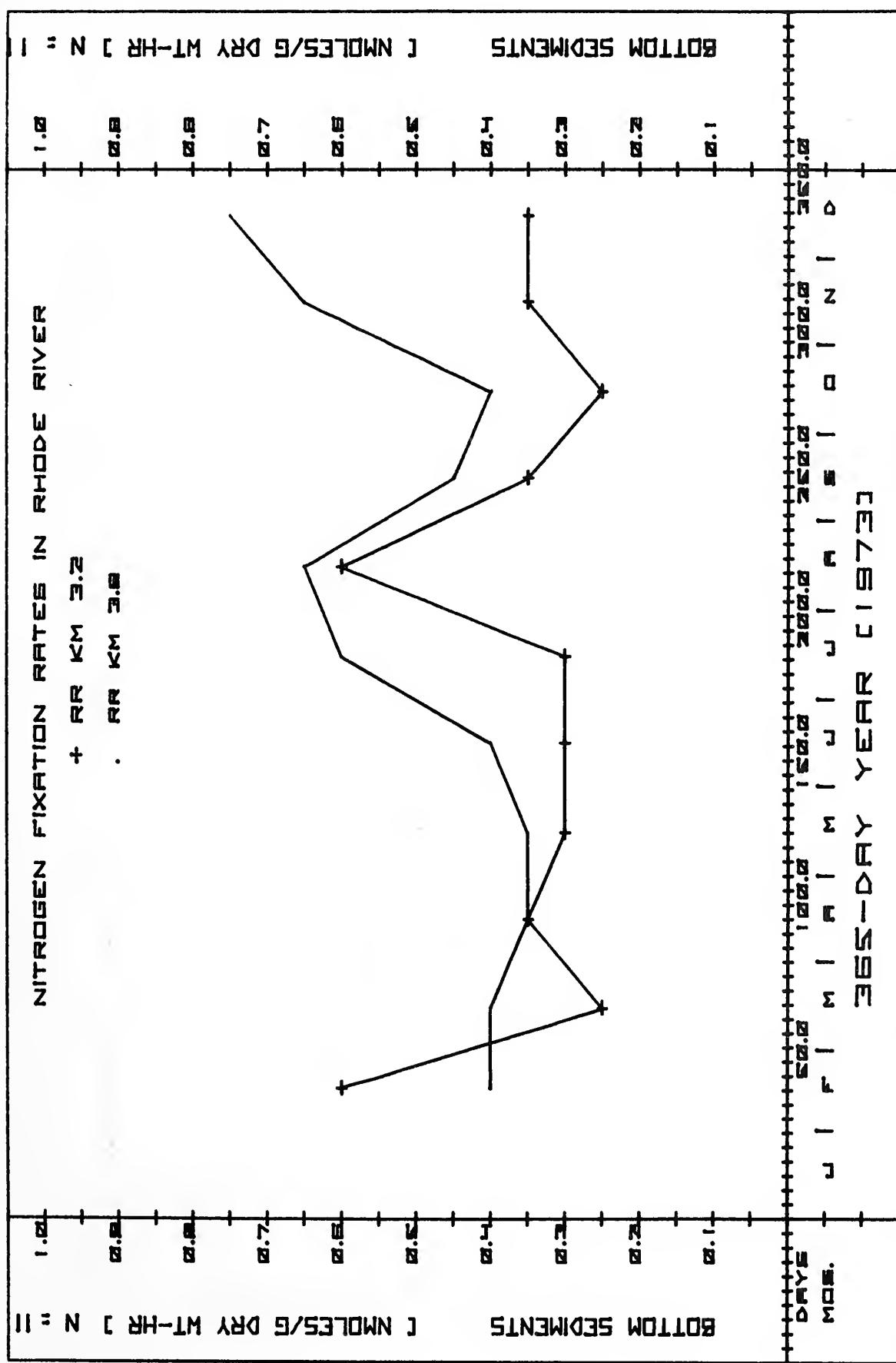
Principal Investigator: Thomas V. Marsho, Biological Sciences Department University of Maryland Catonsville, Maryland.

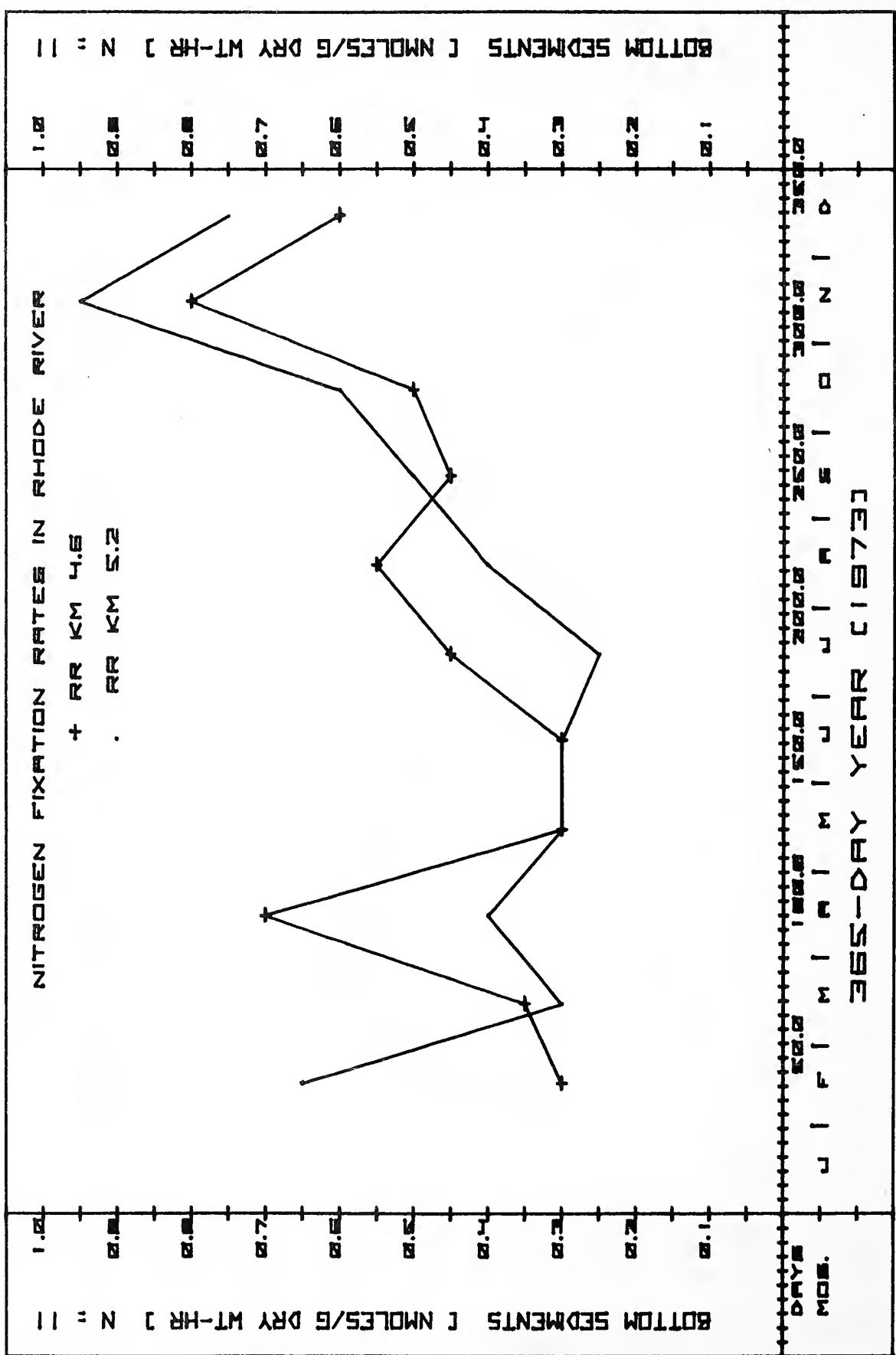
Research Funding: Program for Research Applied to National Needs of the National Science Foundation.

Table Nitrogen Fixation Rates in Rhode River Bottom Sediments (nmoles/g dry wt-hr).

Day of 1973	0.2	1.5	3.2	3.8	4.6	5.2	6.3
46	0.30	0.30	0.60	0.40	0.30	0.65	0.30
74	0.15	0.25	0.25	0.40	0.35	0.30	0.25
105	0.35	0.25	0.35	0.35	0.70	0.40	0.35
135	0.10	0.15	0.30	0.35	0.30	0.30	0.20
166	0.15	0.10	0.30	0.40	0.30	0.30	0.15
196	0.20	0.20	0.30	0.60	0.45	0.25	0.35
227	0.40	0.30	0.60	0.65	0.55	0.40	0.55
258	0.25	0.20	0.35	0.45	0.45	0.50	0.45
288	0.10	0.35	0.25	0.40	0.50	0.60	0.50
319	1.70	0.20	0.35	0.65	0.80	0.95	0.60
349	0.25	0.60	0.35	0.75	0.60	0.75	1.90







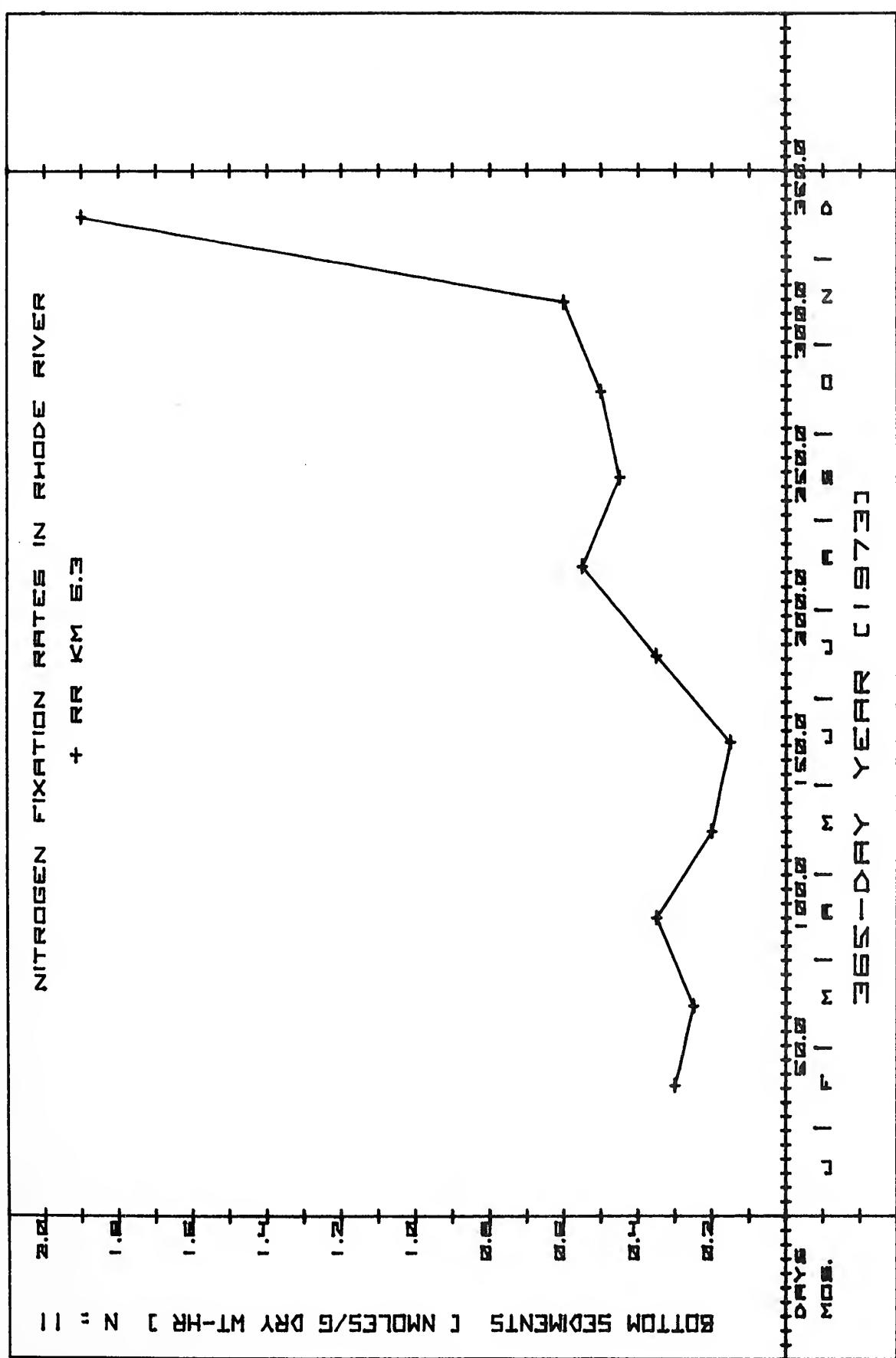
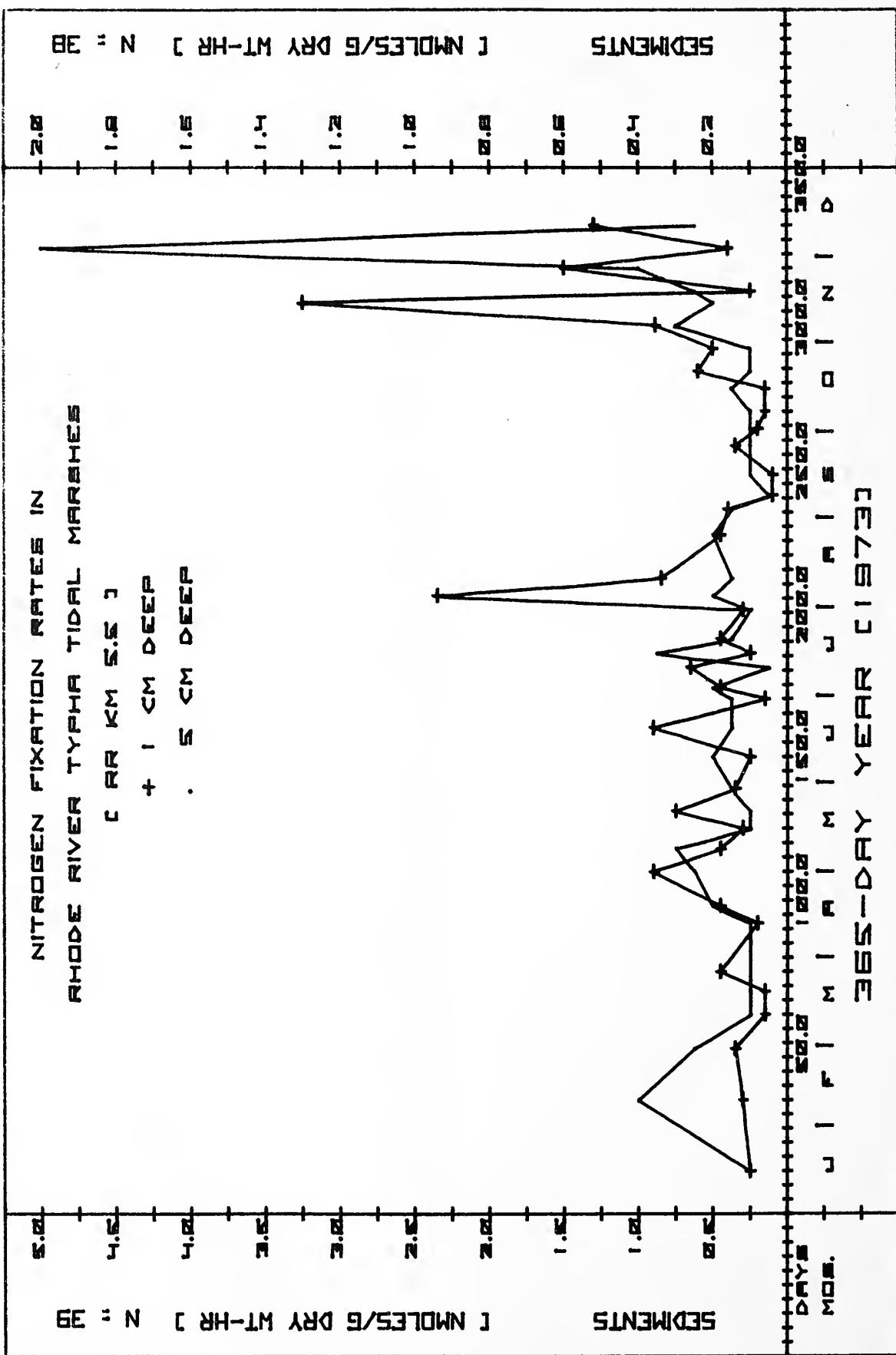


Table      Nitrogen Fixation Rates in Rhode River Typha Tidal Marshes.  
 (RR Km 5.5)

Day of 1973	Sediments (nmoles/g dry wt-hr)	
	1 cm deep	5 cm deep
15	0.25	0.10
40	0.30	0.40
58	0.35	0.25
70	0.15	0.10
78	0.15	0.10
85	0.45	--
102	0.20	0.10
108	0.45	0.20
120	0.90	0.25
128	0.45	0.30
135	0.30	0.10
141	0.75	0.10
149	0.35	0.15
160	0.25	0.20
170	0.90	0.15
180	0.15	0.15
184	0.45	0.20
191	0.65	0.05
196	0.25	0.35

Table (continued)

Day of 1973	Sediments (nmoles/g dry wt-hr)	
	1 cm deep	5 cm deep
201	0.45	0.15
211	0.30	0.10
216	2.35	0.20
222	0.85	0.15
237	0.45	0.20
246	0.40	0.15
251	0.10	0.05
258	0.10	0.10
268	0.35	0.10
274	0.20	0.10
280	0.15	0.10
288	0.15	0.15
294	0.60	0.10
302	0.50	0.10
310	0.85	0.30
318	3.25	0.20
322	0.25	0.25
330	1.50	0.40
337	0.40	2.00
345	1.30	0.25



Biomass Distribution and Abundance of Submerged Higher Aquatic Plants  
(Combined Data 1971-1973)

Biomass - Plant materials were dried to a constant weight at 60 °C (grams dry weight).

Distribution - Was determined by taking random rake collections.

Abundance - Plants were observed within a .1 square meter area after having been cut at the sediment interface.

Principal Investigator: Charles H. Southwick, The Johns Hopkins University.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

Biomass of Different Species of Submerged Vascular Vegetation in the Rhode River, July 1973 (grams of dry weight/square meter  $\pm$  standard error: N= 5 for each  $\bar{x}$ ).

Species	Abundant	Common	Occasional
<u>Myriophyllum spicatum</u> milfoil	---	40.0 $\pm$ 9.8	18.8 $\pm$ 5.9
<u>Potamogeton perfoliatus</u> red-headed grass	205.5 $\pm$ 24.2	113.8 $\pm$ 11.1	40.0 $\pm$ 1.3
<u>Potamogeton pectinatus</u> Sago pondweed	---	52.75 $\pm$ 17.1	52.75* $\pm$ 17.1
<u>Zannichellia palustris</u> Horned pondweed	14.53 $\pm$ 0.5	7.28 $\pm$ 0.3	0.9 $\pm$ 0.2
<u>Ruppia maritima</u> Widgeon grass	---	54.75 $\pm$ 4.6	21.5 $\pm$ 4.8

\* These data figures represented a combined common-occasional abundance category. In this species, the distinction between the two categories was difficult and somewhat arbitrary.

Areas in Hectares Covered by Each Species of Submerged Vascular Vegetation  
Along the Shoreline of the Rhode River Estuary, July 1973.

(Multiply by  $10^4$  to obtain square meters).

Species	Abundant	Common	Occasional
<u>M. spicatum</u>	0	0.491	0.400
location*	---	above 5.5	4.5-5.5
<u>P. perfoliatus</u>	0.382	0.328	0.983
location*	above 5.5	2.5-4.2	1.0-3.5
<u>P. pectinatus</u>	0	1.420	0.218
location*	---	0.0-0.5	above 5.5
<u>Z. palustris</u>	0.928	2.180	2.240
location*	1.0-3.0 and above 5.5	1.2-4.4	1.0-4.2
<u>R. maritima</u>	0	0.055	1.580
location*	---	above 5.5	3.0-5.0

\* Rhode River axes kilometer values (map 2).

Total Estimated Biomass of Submerged Vascular Vegetation in the Rhode  
River Estuary, July 1973. (Kg of dry weight)

Species	Abundant	Common	Occasional	Total
<u>M. spicatum</u>	---	196	75	272
<u>P. perfoliatus</u>	785	373	393	1551
<u>P. pectinatus</u>	---	749	115	864
<u>Z. palustris</u>	135	159	20	314
<u>R. maritima</u>	---	30	340	370

Estimated Grand Total of  
Biomass of Submerged  
Vascular Vegetation (Kg dry wt.) 3371

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Primary Productivity of Submerged Higher Aquatic Plants

Technique - Assays determined as described by Correll, D. L.; Faust, M. A.; Severn, D. J. "Phosphorus Flux and Cycling in Estuaries," in 2nd International Symposium on Estuarine Science, Myrtle Beach, South Carolina Oct., 1973 (In Press).

Principal Investigator: David L. Correll, Radiation Biology Laboratory, Smithsonian Institution and Charles H. Southwick, The Johns Hopkins University

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Sciences Program.

Net Primary Productivity of Submerged Aquatic Plants as Measured by  $^{14}\text{C}$  Uptake. (Mg. C/g. of dry weight/hr.) (Number of determinations in Parentheses).

Species	May	June	July	August
<u>Myriophyllum spicatum</u>	5.76 (2)	6.3 (4)	2.73 (4)	1.87 (2)
<u>Potamogeton perfoliatus</u>	-- --	8.64 (2)	4.11 (2)	2.79 (2)
<u>Potamogeton pectinatus</u>	4.10 (2)	5.11 (4)	1.1 (2)	*
<u>Zannichellia palustris</u>	3.38 (2)	4.50 (2)	3.19 (4)	*
<u>Ruppia maritima</u>	-- --	4.78 (2)	6.50 (2)	*

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\*Species were not available during August.

Community Size Composition and Standing Crops of Higher Plants in  
Tidalmarshes, 1973 (Kirkpatrick Marsh - Map 2, Area South of the  
Line from Station 8 to 9)

Technique: A sampling ring was thrown into a given plant community area, then the living plant material produced that year was cut off at the base, was sorted by species, and brought to constant dry weight at 80°. The area enclosed by the sampling hoop was 0.25 square meters for all but the *Iva frutescens* community which was 0.5 square meters. For the *Iva frutescens* the material sampled included was only leaves and new growth at branch tips. Data was taken at the peak of the growing season (July 6-26 for *Scirpus*, July 3-21 for *Iva*, and September 4-17 for *Spartina*/*Distichlis*).

Principal Investigator: Bert G. Drake, Radiation Biology Laboratory, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Community Size Composition and Standing Crops of Higher Plants in  
Kirkpatrick Marsh - 1973

Community	Area (ha)	Live Standing Crops			Total Dry Wgt (Kg x 10 <sup>3</sup> )
		Mean	Sta. Dev.	N	
Spartina patens/ Distichlis spicata	3.8	570	191	60	21.7
Iva frutescens (includes other species)	9.5	598	121	45	56.8
Iva f. w/o other species*		409	148	45	38.8
Scirpus olneyi	8.6	317.5	92	59	27.3
Scirpus o. w/o other species		153	30	59	13.1

\* "other species" includes Scirpus, Spartina, and Distichlis

\*\* Includes Spartina and Distichlis

When the individual species are considered by themselves, the following data result.

Species	Total area where found (ha)	Live Standing Crop Total dry wgt. (Kg x 10 <sup>3</sup> )
S. patens/D. spicata	21.9	52
I. frutescens	9.5	38.9
S. olneyi	18.1	14.9

## Agricultural Crops Data for Subwatersheds

Method of Estimation: Direct personal questioning of watershed farmers.

Principal Investigator: Kevin Sullivan, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Agricultural Crops - 1973

Subwatershed (maps 2 and 3)	Area in Hectares of:					Truck Produce
	Corn	Hay	Soybeans	Sorghum	Tobacco	
North Branch (#1)	12.1	6.1	0	0	6.1	35.6
Blue Jay Branch (#2)	12.1	7.3	0	0	2.8	12.1
Williamson Branch (#3)	0	0	0	0	0.8	40.1
Main Branch (just below #4)	127.7	64.8	32.8	0	28.9	171.0
Steinlein Branch (SL)	22.3	10.1	0	0	7.3	18.2
Sheet runoff area on South side of Rhode River from Steinlein to Mouth	0	0	0	0	6.9	0
Sellman Creek	21.0	0	0	0	0	53.4
Total for Rhode River watershed	195.2	88.3	32.8	6.9	42.9	355.5

804

Human Populations on Subwatersheds (maps 2 and 3)

Method of Estimation: The median figure for the census tracts making up the Rhode River watershed was 3.2 persons per year around telephone hook up.

Principal Investigator: Kevin Sullivan, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

## Human Populations - 1973

<u>Subwatershed (maps 2 and 3)</u>	<u>Number of Houses</u>	<u>Number of People</u>
North Branch (#1)	25	80
Blue Jay Branch (#2)	21	67
Williamson Branch (#3)	31	99
Main Branch of Muddy Creek (Just below #4)	123	396
Steinlein Branch (SL)	8	26
Sheet runoff area on South side of Rhode River from Steinlein to mouth	9	28
Fox Creek (F)	2	40*
Sellman Creek	26	83
Bearneck Creek	123	494*
Whitemarsh Creek	192	614
Cadle Creek	146	469
Sheet runoff to North of Cadle Creek	81	259
Sheet runoff to South of Cadle Creek	87	278
<u>Total</u>	<u>874</u>	<u>2933</u>

\* Includes Institutional Populations.

## Livestock Population Data for Subwatersheds

Method of Estimation: Direct personal questioning of watersheds farmers.

Principal Investigator: Kevin Sullivan, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

## Livestock Population Data 1973

Subwatershed (maps 2 and 3)	Cattle	Horses	Poultry	Hogs
North Branch (#1)	205	14	100	7
Blue Jay Branch (#2)	30	9	0	0
Williamson Branch (#3)	82	2	0	114
Main Branch (Just below #4)	102	90	245	25
Steinlein Branch (SL)	38	4	25	10
Sheet runoff area on South side of Rhode River from Steinlein to mouth	70	15	0	1
Sellman Creek	125	1	60	3
Total for Rhode River Watershed	652	135	430	160

Waterfowl Populations Wintering on Rhode River, 1973

Method of Estimation: Direct counts from blinds with spotting scopes.

Principal Investigator: William J. L. Sladen, Johns Hopkins University,  
Baltimore, Maryland

Research Funding: Chesapeake Bay Foundation.

Table Weights of Waterfowl Trapped for Banding (1972-73 season)

Species	Male Weight (Kg)				Female Weight (Kg)			
	No.	Avg.	Min.	Max.	No.	Avg.	Min.	Max.
<i>Aythya valisineria</i> Canvasback	50	1.3	1.1	1.6	50	1.3	1.0	1.6
<i>Aythya affinis</i> Lesser Scaup	11	0.7	0.6	0.9	0	0.0	0.0	0.0
<i>Aythya marila</i> Greater Scaup	1	0.8	0.0	0.0	0	0.0	0.0	0.0
<i>Aythya americana</i> Redhead	6	1.1	1.0	1.2	2	0.8	0.8	0.9
<i>Aythya collaris</i> Ringneck	0	0.0	0.0	0.0	1	0.6	0.0	0.0
<i>Bucephala albeola</i> Bufflehead	20	0.5	0.4	0.6	7	0.4	0.3	0.6
<i>Branta canadensis</i> Canada Goose	14	4.5	3.3	5.1	2	4.0	4.0	4.1

Canvasback Duck Populations in Rhode River  
(RR Km 0.7-2.0)

Day of 1973	Total Number	Ratio of Males to Females
4	17	1.1
5	581	2.5
6	6	5.0
21	1025	4.9
27	6	5.0
44	170	3.6
48	144	4.0
49	234	2.9
51	214	3.0
52	1033	4.0
56	9	0.8
59	130	4.0
65	201	4.9
66	60	3.6
68	140	4.4
69	54	1.8
70	206	2.9
71	895	3.0
72	570	3.2
73	385	3.3
76	367	2.0

(continued)

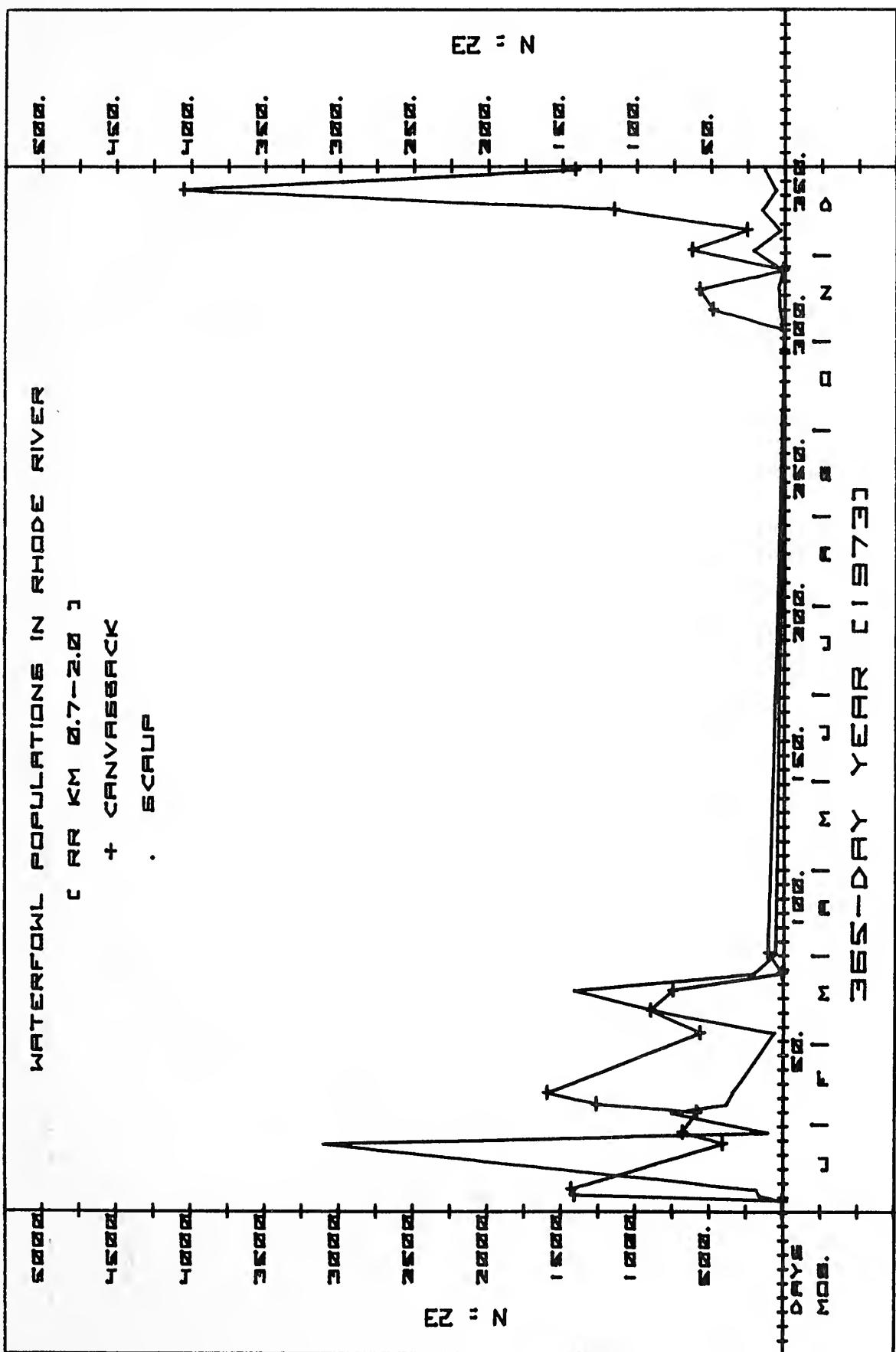
Day of 1973	Total Number	Ratio of Males to Females
77	90	2.2
78	82	2.0
79	55	1.4
83	23	2.3
91	99	0.91
93	594	0.83
96	556	0.83
99	576	1.0
103	361	0.59

Table Waterfowl Populations in Rhode River (RR Km 0.7-2.0)

Day of 1973	<i>Cygnus columbianus</i>	<i>Branta canadensis</i>	<i>Aythya valisneria</i>	<i>Aythya marila</i>	<i>Oxyura jamaicensis</i>
	Whistling Swan	Canada Goose	Canvasback	Scaup	Ruddy Duck
4	0	0	1	0	1200
6	0	0	1408	16	955
8	0	222	1430	18	740
24	25	380	405	310	1300
28	0	0	677	10	1215
35	0	0	582	75	840
38	0	0	1260	38	825
42	0	0	1590	34	910
63	0	0	560	6	306
71	0	0	895	86	360
78	0	0	745	141	330
84	0	0	6	20	220
91	0	0	99	5	158
301	0	0	0	0	0

Table (continued)

Day of 1973	<i>Cygnus columbianus</i>	<i>Branta canadensis</i>	<i>Aythä valisneria</i>	<i>Aythä marila</i>	<i>Oxyura jamaicensis</i>	
	Whistling Swan	Canada Goose	Canvasback	Aythä affinis	Scaup	Ruddy Duck
308	0	0	0	0	0	0
315	0	6	482	3	720	
322	5	710	575	4	315	
329	0	0	8	1	151	
336	0	0	625	21	380	
343	0	0	254	3	525	
350	4	0	1150	15	325	
357	1	221	4051	6	535	
364	0	89	1415	13	410	



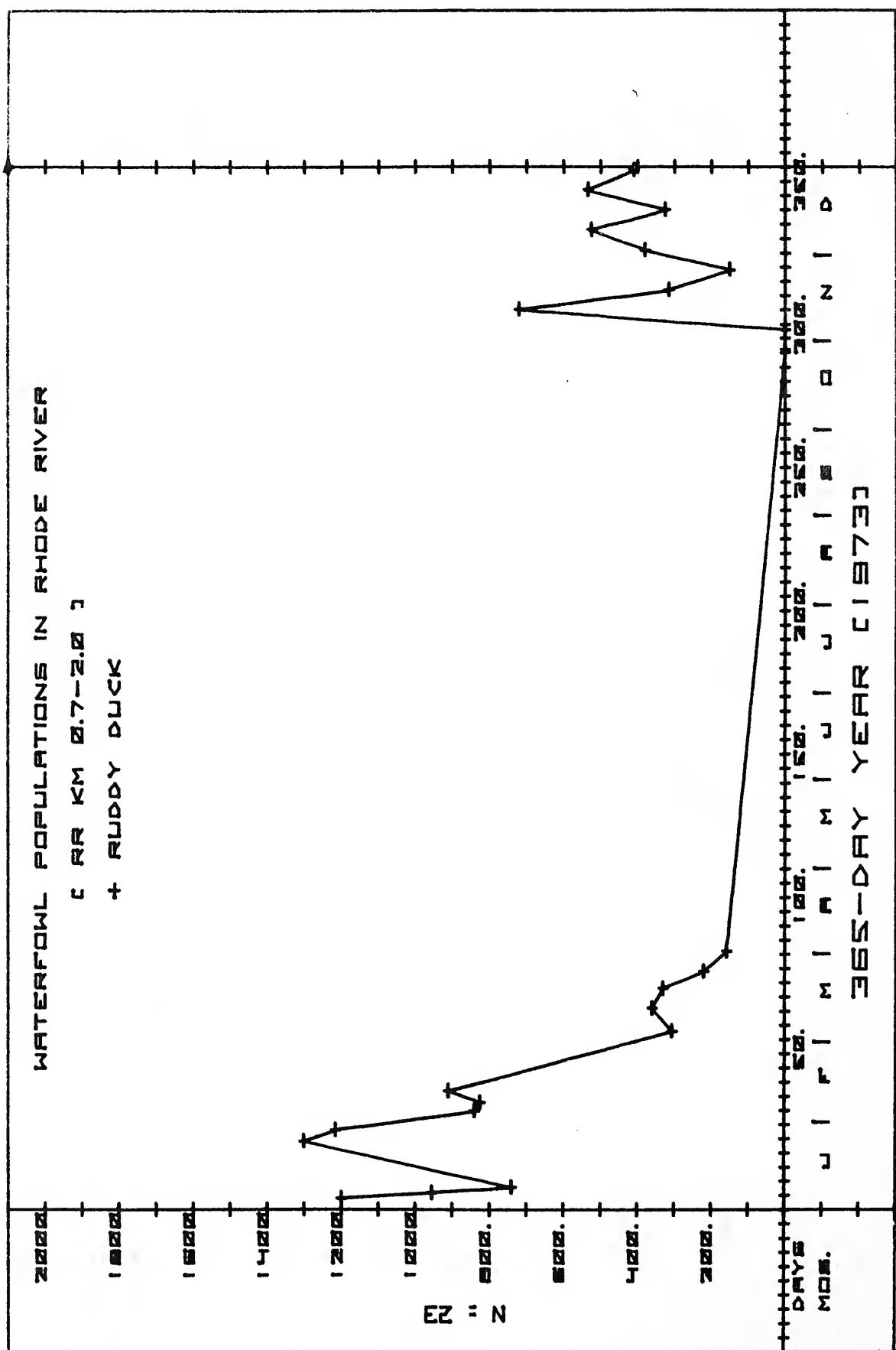


Table (continued)

Day of 1973	<i>Aythya americana</i> Redhead	<i>Aythya collaris</i> Ringneck	<i>Bucephala albeola</i> Bufflehead	<i>Bucephala clangula</i> Golden Eye	<i>Anas platyrhynchos</i> Mallard
4	3	0	9	1	0
6	4	4	12	2	0
8	1	3	12	0	0
24	0	0	1	0	2
28	0	0	0	11	0
35	0	0	3	0	0
38	0	0	21	0	0
42	0	0	0	0	0
63	0	0	2	0	0
71	2	0	0	9	0
78	0	0	6	0	2
84	0	0	0	0	0
91	0	0	8	0	2
301	0	0	0	0	0

Table (continued)

Day of 1973	<i>Aythya americana</i> Redhead	<i>Aythya collaris</i> Ringneck	<i>Bucephala albeola</i> Bufflehead	<i>Bucephala clangula</i> Golden Eye	<i>Anas platyrhynchos</i> Mallard
308	0	0	11	0	0
315	0	1	0	0	0
322	0	0	1	0	0
329	0	0	1	0	0
336	0	0	0	0	0
343	0	0	0	0	0
350	0	0	7	0	0
357	0	0	24	0	0
364	6	0	18	0	0

Table (continued)

Day of 1973	Anas rubripes Black Duck	Mareca americana American Widgeon	Spatula clypeata Shoveler
4	0	0	0
6	0	0	0
8	4	0	0
24	0	0	0
28	0	0	0
35	0	0	0
38	0	0	0
42	0	0	0
63	0	0	0
71	0	0	4
78	0	0	3
84	0	0	0
91	0	0	0
301	0	0	0

Table (continued)

Day of 1973	Anas rubripes Black Duck	Mareca americana American Widgeon	Spatula clypeata Shoveler
308	0	0	0
315	2	0	0
322	2	0	0
329	0	0	0
336	0	0	0
343	0	0	0
350	0	0	0
357	31	0	0
364	0	0	0

Table (continued)

Day of 1973	Mergus serrator Red-Breasted Merganser	Columbus auritus Horned Grebe	Podilymbus podiceps Pied-Billed Grebe
4	0	0	0
6	0	0	0
8	0	0	0
24	0	0	0
28	0	0	0
35	0	0	0
38	0	0	0
42	0	0	0
63	0	0	0
71	0	0	0
78	0	0	0
84	0	0	0
91	0	0	0
301	0	0	0

Table (continued)

Day of 1973	<i>Mergus serrator</i> Red-Breasted Merganser	<i>Coturnis auritus</i> Horned Grebe	<i>Podilymbus podiceps</i> Pied-Billed Grebe
308	0	0	1
315	0	0	1
322	0	1	1
329	0	0	1
336	0	1	0
343	0	2	1
350	0	0	0
357	0	1	1
364	0	0	0

### Breeding Bird Populations on the Muddy Creek Watershed

Technique: Populations were surveyed by two methods: (1) capture, marking, release, and recapture; (2) censusing of singing males. Capture was by means of mist nets arranged in grids in woodlands and in old fields. Breeding birds were banded with Fish and Wildlife Service bands. Physiogamy of nesting area vegetation was estimated as described by James and Shugart [Aud. Field Notes 24; 727 (1970)] and by Lindsay, et al [Ecology 39; 428 (1938)]. Effective areas of study were woodland, 15 hectares; (rows Z, and A-C), old fields (rows D-J), 10 hectares. Woodland location was immediately northwest of the station (map 2) and the old fields location was south and southeast from the station (map 2).

Principal Investigator: Francis S. L. Williamson, Chesapeake Bay Center for Environmental Studies, Smithsonian Institution.

Research Funding: Program for Research Applied to National Needs of the National Science Foundation and the Smithsonian Institution's Environmental Science Program.

Table Summary of captures of breeding adult species in mature woodland and old fields in 1973.

Numbers in parentheses are adjusted to eliminate rows H-J which were first run 9 June 1973.

Date	Habitat	Net Rows	Woodthrush			Cardinal			Red-eyed Vireo			Acadian Flycatcher			Carolina Wren		
		NB*	R**	SD***	NB	R	SD	NB	R	SD	NB	R	SD	NB	R	SD	
5/30	Woodland	Z,A	10	0	0	3	0	0	19	0	0	7	0	1	1	0	0
5/31	Woodland	B,C	8	0	0	2	0	0	4	0	0	3	0	0	2	0	0
6/ 1	Old Fields	D-G	1	1	0	6	0	0	2	0	0	2	0	0	5	0	0
6/ 5	Woodland	Z,A	6	1	0	2	0	0	4	1	0	0	1	0	1	0	0
6/ 6	Woodland	B,C	8	3	0	6	0	0	5	2	0	4	0	0	0	0	0
6/7-9	Old Fields	D-G	3(1)	1(1)	1(1)	4(3)0	0	1(1)0	0	0	1(1)0	0	0	1(1)0	2(2)0	0	0
6/11	Woodland	Z,A	13	7	3	2	1	1	1	4	0	5	0	0	4	0	0
6/13	Woodland	B,C	7	5	1	5	0	0	1	1	0	1	1	0	3	1	1
6/14	Old Fields	D-J	4(3)	0	1(1)12(6)0	0	3(0)0	0	2(0)0	0	2(0)0	0	5(1)1(1)0				
6/19	Woodland	Z,A	8	2	1	1	0	0	0	0	0	0	0	0	2	1	1
6/20	Woodland	B,C	6	3	3	4	0	0	0	0	0	1	0	0	3	2	0
6/22	Old Fields	D-J	2(2)	2(2)	0	5(2)0	0	0	0	0	0	0	0	0	2(1)1(1)0		
7/30	Woodland	Z,A	8	7	1	3	1	0	0	0	0	0	0	0	2	0	0
7/31	Woodland	B,C	2	3	0	3	1	0	1	0	0	1	0	0	0	1	0
8/6	Old Fields	D-J	1(1)	0	0	5(2)0	0	2(0)0	0	2(2)	0	0	0	0	1(0)0		

Table (continued)

Date	Habitat	Net Rows	Tufted Titmouse	Carolina Chickadee	White-eyed Vireo	Ovenbird	Scarlet Tanager
		NB R SD	NB R SD	NB R SD	NB R SD	NB R SD	NB R SD
5/30	Woodland	Z,A	5 0 2	0 0 0	0 0 0	5 0 0	1 0 0
5/31	Woodland	B,C	3 0 0	0 0 0	0 0 0	3 0 0	0 0 0
6/1	Old Fields	D-G	0 0 1	0 0 0	2 0 0	0 0 0	0 0 0
6/5	Woodland	Z,A	0 0 0	0 0 0	0 0 0	2 1 0	0 0 0
6/6	Woodland	B,C	1 0 0	0 0 0	0 0 0	0 0 0	1 0 0
6/7-9	Old Fields	D-G	0 0 1(1)0	0 0 1(0)0	0 0 0	0 0 0	1(1)0 0
6/11	Woodland	Z,A	0 0 0	0 0 0	0 0 0	4 0 0	0 0 0
6/13	Woodland	B,C	0 0 0	0 0 0	0 0 0	1 0 0	3 1 0
6/14	Old Fields	D-J	0 0 1(1)0	0 0 3(2)2(2)	0 0 0	0 0 0	0 0 0
6/19	Woodland	Z,A	0 1 0	0 1 0	0 0 0	2 0 0	0 0 0
6/20	Woodland	B,C	0 0 3	0 0 0	0 0 0	0 1 0	0 0 0
6/22	Old Fields	D-J	0 0 0	0 0 0	1(0)3(2) 1(1)	1(1)0 0	0 0 0
7/30	Woodland	Z,A	1 0 0	0 0 0	0 0 0	0 0 0	0 0 0
7/31	Woodland	B,C	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
8/6	Old Fields	D-J	0 0 0	0 0 0	0 1(1) 0	0 0 0	0 0 0

Table (continued)

Date	Habitat	Net Rows	Kentucky Warbler			Red-bellied Woodpecker			Other			Total	
			NB	R	SD	NB	R	SD	NB	R	SD	NB	R
5/30	Woodland	Z,A	0	0	0	0	0	0	12	0	0	65	0
5/31	Woodland	B,C	0	0	0	0	0	0	3	0	0	28	0
6/1	Old Fields	D-G	0	0	0	0	0	0	10	0	0	29	1
6/5	Woodland	Z,A	1	0	0	1	0	0	2	0	0	19	4
6/6	Woodland	B,C	2	0	0	0	0	0	2	0	0	29	5
6/7-9	Old Fields	D-G	0	0	0	0	0	0	4(3)	0	0	17(12)4(2)	1(1)
6/11	Woodland	Z,A	2	0	0	5	1	0	7	0	0	43	13
6/13	Woodland	B,C	1	0	0	0	0	0	2	0	0	24	9
6/14	Old Fields	D-J	1(1)	0	0	0	0	0	10(4)	0	0	41(18)3(3)	1(1)
6/19	Woodland	Z,A	0	0	0	0	0	0	2	0	0	16	5
6/20	Woodland	B,C	0	3	1	1	0	0	2	0	0	20	9
6/22	Old Fields	D-J	0	0	0	0	0	0	5(2)	0	0	16(8)	6(5)
7/30	Woodland	Z,A	1	1	0	0	0	0	0	0	0	15	9
7/31	Woodland	B,C	0	0	0	0	0	0	0	0	0	7	4
8/6	Old Fields	D-J	0	0	0	0	0	0	2(1)	0	0	12(7)	2(1)
													0

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Table (continued)

- \* Birds captured for the first time and newly banded.
- \*\* Birds banded previously in the 1973 breeding season and recaptured.
- \*\*\* Birds recaptured the same day.

Table Population estimates of breeding species during the breeding season, 25 May - 15 July 1973,  
in mature Woodland (W) and Old Fields (OF).

	Wood Thrush		Cardinal		Red-eyed Vireo		White-eyed Vireo		Carolina Wren		Total Population	
	W	OF	W	OF	W	OF	W	OF	W	OF	W	OF
M, number present in marking period*	32	2	13	9	32	3	0	2	4	7	141	41
N, number present in sampling period*	47	6	14	8	7	0	0	7	14	3	132	30
M, number of M recaptured in sampling period*	13	1	2	0	5	0	0	2	2	1	28	4
N, estimated population = $\frac{MN}{M}$	115.7	-	91	-	44.8	-	-	7	-	-	664.7	307.5
Standard Error of N**	27	-	59.6	-	10.7	-	-	4.2	-	-	111.5	143.1
Estimated Total Population = $N_W + N_{OF}$	128.7	242	49.0		7.0		7.0		62.3		915.7	
Standard Error of ( $N_W + N_{OF}$ )	29.5	163.2	11.7		4.2		4.2		32.7		144.9	
Density (N/ha)***	4.8	3.8	-	1.9	-	-	0.7	-	-	-	27.7	30.8
Density in W and OF combined	3.8	7.1	1.4		0.2		1.4		1.8		26.9	

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Table (continued)

\* To estimate the population on the basis of number of recaptured birds the number marked and released ( $M$ ) during a marking period are compared to the number of those marked birds recaptured ( $m$ ) during a sampling period in which  $n$  birds were caught. The population estimate ( $N$ ) for the number present during the marking period is :  $N = \frac{Mn}{m}$

$$** SE = \frac{(M^2 n - (n-m)^2) / 2}{(M^3)}$$

\*\*\* Estimated effective area sampled by mist nets was : Woodland (Rows Z-C) = 24 ha; Old Fields (Rows D-G) = 10 ha

Table Physiogamy of nesting area vegetation. (1973)

Characteristic measured	Woodland (N=44)	Old Fields (N=27)
1. Vegetative Cover		830
A. Canopy:		
1. Number of positive readings out of 20 for presence of foliage	18 ± 3SD	11 ± 6SD
2. % positive readings	90	55
3. Mean maximum height (m)	29.0	13.7
4. Mean minimum height (m)	10.0	4.6
B. Understory:		
1. Number of positive readings out of 20 for presence of foliage	12 ± 3SD	12 ± 5 SD
2. % positive readings	60	60
3. Mean maximum height (m)	6.4	4.2
4. Mean minimum height (m)	1.1	1.1

Table (continued)

Characteristic measured	Woodland (N=44)	Old Fields (N=27)
C. Ground:		
1. Number of positive readings out of 20 for presence of foliage	11 ± 4SD	17 ± 3SD
2. % positive readings	55	85
3. Mean maximum height (m)	0.72	0.84
2. Mean number trees per plot with a diameter at breast height (DBH)=		
A. 7.5 - 15.0 cm	8.7	5.3
B. 15.1 - 23.0 cm	3.3	2.0
C. 23.1 - 30.0 cm	1.9	0.5
D. 30.1 - 38.0 cm	1.7	0.3
E. Greater than 38.0 cm	3.2	0.0

Table Number of resident adult birds captured during the breeding season. Numbers are for net rows D through G unless they are in parentheses, in which case they are for the extended old fields grid of rows D through J. (May 25 - July 15, 1973)

Species	Woodland			Old Fields		Total
	NB*	R**	R	NB	R	
Wood Thrush <u>Hylocichla mustelina</u>	42	27		4(6)	1(2)	74(77)
Cardinal <u>Cardinalis cardinales</u>	19	8		13(23)	3	43(53)
Red-eyed Vireo <u>Vireo olivaceus</u>	25	9		3(6)	0	37(40)
Carolina Wren <u>Thryothorus ludovicianus</u>	12	4		8(13)	2	26(31)
Acadian Flycatcher <u>Empidonax virescens</u>	17	4		2(4)	0	23(25)
Ovenbird <u>Seiurus aurocapillus</u>	13	5		0	0	18
Tufted Titmouse <u>Parus bicolor</u>	2	6		0	1	9
Carolina Chickadee <u>Parus carolinensis</u>	5	1		3	0	9

Table (continued)

Species	Woodland NB*	Woodland R**	Old NB	Fields R	Total
Kentucky Warbler <i>Oporornis formosus</i>	5	1	1	0	7
Yellow-breasted Chat <i>Icteria virens</i>	0	0	3(5)	2	5(7)
Bluejay <i>Cyanocitta cristata</i>	6	1	0	0	7
Red-bellied Woodpecker <i>Centurus carolinus</i>	6	1	0	0	7
White-eyed Vireo <i>Vireo griseus</i>	0	0	4(6)	0	4(6)
Scarlet Tanager <i>Piranga olivacea</i>	2	4	0	0	6
Prairie Warbler <i>Dendroica discolor</i>	0	0	2(5)	1	3(6)
Catbird <i>Dumetella cardinensis</i>	4	0	1(2)	0	5(6)
Louisiana Waterthrush <i>Seiurus motacilla</i>	3	2	0	0	5

Table (continued)

Species	Woodland NB*	R**	Old Fields NB R	Total
Downy Woodpecker <i>Dendrocopos pubescens</i>	1	2	0(1) 0	3(4)
American Goldfinch <i>Spinus tristis</i>	0	0	4 0	4
Rufous-sided Towhee <i>Pipilo erythrrophthalmus</i>	0	0	1(4) 0	1(4)
Indigo Bunting <i>Passerina cyanea</i>	0	0	3 0	3
Eastern Wood Peewee <i>Muscicapa vires</i>	3	0	0 0	3
Common Grackle <i>Quiscalus quiscula</i>	3	0	0 0	3
Hairy Woodpecker <i>Dendrocopos villosus</i>	2	0	0 0	2
Yellow-shafted Flicker <i>Colaptes auratus</i>	1	0	1 0	2
Yellowthroat <i>Geothlypis trichas</i>	1	0	1 0	2

Table (continued)

Species	Woodland			Old Fields		Total
	NB*	R**	NB	R		
Brown Thrasher <u>Toxostoma rufum</u>	1	0	0	0	0	1
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	0	0	0(1)	0	0(1)	0(1)
Brown-headed Cowbird <u>Molothrus ater</u>	1	0	0	0	0	1
Ruby-throated Hummingbird <u>Archilochus colubris</u>	1	0	0	0	0	1
Hooded Warbler <u>Wilsonia citrina</u>	-	-	-	-	-	0
Parula Warbler <u>Parula americana</u>	-	-	-	-	-	0
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	-	-	-	-	-	0
Unidentified Empidonax Flycatcher <u>Empidonax</u> spp.	-	-	-	-	-	0
American Robin <u>Turdus migratorius</u>	-	-	-	-	-	0

Table (continued)

Species	Woodland			Old Fields NB	R	Total
	NB*	R**				
Northern Waterthrush <i>Seiurus noveboracensis</i>	-	-	-	0	0	0
Mourning Warbler <i>Oporornis philadelphus</i>	-	-	-	0	0	0
American Woodcock <i>Philohela minor</i>	-	-	-	0	0	0
Field Sparrow <i>Spizella pusilla</i>	-	-	-	0	0	0
Summer Tanager <i>Piranga rubra</i>	-	-	-	0	0	0
Worm-eating Warbler <i>Helmintheros vermivorus</i>	-	-	-	0	0	0
Pileated Woodpecker <i>Dryocopus pileatus</i>	-	-	-	0	0	0
Crested Flycatcher <i>Myiarchus crinitus</i>	-	-	-	0	0	0
Black and White Warbler <i>Mniotilla varia</i>	-	-	-	0	0	0

\*NB - Newly banded.

\*\* R - Recaptures

Table Comparison of estimated of the number of breeding birds in Woodland (W) and Old Fields (OF) in 1973. Population estimates were based on the number of singing males censused and on the number of birds recaptured in mist nets.

Species	Number Singing Males			Population estimated from singing males census			Population estimated by recapture		
	W	OF	W	OF	Total	W	OF	Total	
Wood Thrush <u>Hylocichla mustelina</u>	25	2	50	4	54	116	129		
Cardinal <u>Cardinalis cardinalis</u>	20	24	40	48	88	-	-		
Red-eyed Vireo <u>Vireo olivaceus</u>	34	13	68	26	94	45	49		
Carolina Wren <u>Thryothorus ludovicianus</u>	13	9	26	18	44	-	-		62
Acadian Flycatcher <u>Empidonax virescens</u>	23	4	46	8	54	-	-		
Ovenbird <u>Seiurus aurocapillus</u>	11	0	22	0	22	-	-		
Tufted Titmouse <u>Parus bicolor</u>	10	4	20	8	28	-	-		

Table (continued)

Species	Number Singing Males			Population estimated from singing males census			Population estimated by recapture		
	W	0F	W	0F	Total	W	0F	Total	
Carolina Chickadee <i>Parus carolinensis</i>	7	2	14	4	18	-	-	-	
Kentucky Warbler <i>Oporornis formosus</i>	6	0	12	0	12	-	-	-	
Yellow-breasted Chat <i>Icteria virens</i>	0	5	0	10	10	-	-	-	
Bluejay <i>Cyanocitta cristata</i>	3	1	6	2	8	-	-	-	
Red-bellied Woodpecker <i>Centurus carolinus</i>	14	2	28	4	32	-	-	-	
White-eyed Vireo <i>Vireo griseus</i>	0	8	0	16	16	0	7	7	
Scarlet Tanager <i>Piranga olivacea</i>	8	0	16	0	16	-	-	-	
Prairie Warbler <i>Dendroica discolor</i>	0	5	0	10	10	-	-	-	
Catbird <i>Dumetella cardinensis</i>	0	1	0	2	2	-	-	-	

Table (continued)

Species	Number Singing Males			Population estimated from singing males census			Population estimated by recapture		
	W	OF	W	OF	Total	W	OF	Total	
Louisiana Waterthrush <i>Seiurus motacilla</i>	2	0	4	0	4	-	-	-	
Downy Woodpecker <i>Dendrocopos pubescens</i>	4	4	8	8	16	-	-	-	
American Goldfinch <i>Spinus tristis</i>	0	1	0	2	2	-	-	-	
Rufous-sided Towhee <i>Pipilo erythrrophthalmus</i>	3	13	6	26	32	-	-	-	
Indigo Bunting <i>Passerina cyanea</i>	0	3	0	6	6	-	-	-	
Eastern Wood Peewee <i>Muscicapa virens</i>	13	0	26	0	26	-	-	-	
Common Grackle <i>Quiscalus quiscula</i>	1	0	2	0	2	-	-	-	
Hairy Woodpecker <i>Dendrocopos villosus</i>	2	0	4	0	4	-	-	-	
Yellow-shafted Flicker <i>Colaptes auratus</i>	2	5	8	10	18	-	-	-	

Table (continued)

Species	Number Singing Males			Population estimated from singing males census			Population estimated by recapture		
	W	OF	W	OF	OF	Total	W	OF	Total
Yellowthroat <u>Geothlypis trichas</u>	4		5	8	10	18	-	-	-
Brown Thrasher <u>Toxostoma rufum</u>	0		0	0	0	0	-	-	-
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	6		3	12	6	18	-	-	-
Brown-headed Cowbird <u>Molothrus ater</u>	0		0	0	0	0	-	-	-
Ruby-throated Hummingbird <u>Archilochus colubris</u>	0		0	0	0	0	-	-	-
Hooded Warbler <u>Wilsonia citrina</u>	0		0	0	0	0	-	-	-
Parula Warbler <u>Parula americana</u>	6		1	12	2	14	-	-	-
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	2		0	4	0	4	-	-	-
Unidentified Empidonax Flycatcher									
Empidonax spp.	0		0	0	0	0	0	0	0

Table (continued)

Species	Number Singing Males			Population estimated from singing males census			Population estimated by recapture		
	W	OF	W	OF	Total	W	OF	Total	
American Robin <i>Turdus migratorius</i>	0	1	0	2	2	-	-	-	
Field Sparrow <i>Spizella pusilla</i>	0	1	0	2	2	-	-	-	
Pileated Woodpecker <i>Dryocopus pileatus</i>	1	0	2	0	2	-	-	-	
Crested Flycatcher <i>Myiarchus crinitus</i>	2	0	4	0	4	-	-	-	
Barred Owl <i>Strix varia</i>	1	0	2	0	2	-	-	-	
Blue Grosbeak <i>Guiraca caerulea</i>	0	1	0	2	2	-	-	-	
Yellow-throated Vireo <i>Vireo flavifrons</i>	2	0	4	0	4	-	-	-	
Mockingbird <i>Mimus polyglottus</i>	0	1	0	2	2	-	-	-	
Bobwhite Quail <i>Colinus virginianus</i>	0	4	0	8	8	-	-	-	
Total	225	120	450	240	690	665	308	916	

Table Mean maximum recapture distance for species in the 1973 breeding season.

Species	Number Recaptured	Mean Maximum Distance (Meters)	Range (Meters)
Acadian Flycatcher <u>Empidonax virescens</u>	4	50	0 - 100
Carolina Wren <u>Thryothorus ludovicianus</u>	7	114	0 - 304
Wood Thrush <u>Hylocichla Mustelina</u>	26	135	0 - 559
White-eyed Vireo <u>Vireo griseus</u>	5	103	0 - 180
Red-eyed Vireo <u>Vireo olivaceus</u>	7	52	0 - 112
Ovenbird <u>Seiurus aurocapillus</u>	2	142	0 - 283
Kentucky Warbler <u>Oporornis formosus</u>	3	168	100 - 224
Cardinal <u>Cardinalis cardinales</u>	3	83	50 - 100

Table Number of resident males and females captured in mist nets during the breeding season.

(May 25 - July 15, 1973)

Species	Male	Female	Undetermined	Total
Wood Thrush <u><i>Hylocichla mustelina</i></u>	40	36	1	77
Cardinal <u><i>Cardinalis cardinalis</i></u>	26	26	0	52
Red-eyed Vireo <u><i>Vireo olivaceus</i></u>	26	11	1	38
Carolina Wren <u><i>Thryothorus ludovicianus</i></u>	9	19	1	29
Acadian Flycatcher <u><i>Empidonax virescens</i></u>	13	7	5	25
Ovenbird <u><i>Seiurus aurocapillus</i></u>	13	5	0	18
Tufted Titmouse <u><i>Parus bicolor</i></u>	5	3	1	9
Carolina Chickadee <u><i>Parus carolinensis</i></u>	2	7	0	9
Kentucky Warbler <u><i>Oporornis formosus</i></u>	4	2	1	7
Yellow-breasted Chat <u><i>Icteria virens</i></u>	3	2	0	5

Table (continued)

Species	Male	Female	Undetermined	Total
Indigo Bunting <u>Passerina cyanea</u>	2	1	0	3
Eastern Wood Pewee <u>Muscicapa vires</u>	2	1	0	3
Common Grackle <u>Quiscalus quiscula</u>	3	0	0	3
Hairy Woodpecker <u>Dendrocopos villosus</u>	0	0	3	3
Yellow-shafted Flicker <u>Colaptes auratus</u>	0	2	0	2
Yellowthroat <u>Geothlypis trichas</u>	2	0	0	2
Brown Thrasher <u>Toxostoma rufum</u>	0	1	0	1
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	0	0	1	1
Brown-headed Cowbird <u>Molothrus ater</u>	0	1	0	1
Ruby-throated Hummingbird <u>Archilochus colubris</u>	0	1	0	1

Table (continued)

Species	Male	Female	Undetermined	Total
Bluejay <u>Cyanocitta cristata</u>	0	6	1	7
Red-bellied Woodpecker <u>Centurus carolinus</u>	0	0	7	7
White-eyed Vireo <u>Vireo griseus</u>	3	5	0	8
Scarlet Tanager <u>Piranga olivacea</u>	2	5	0	7
Prairie Warbler <u>Dendroica discolor</u>	4	2	0	6
Catbird <u>Dumetella cardinensis</u>	5	1	0	6
Louisiana Waterthrush <u>Seiurus motacilla</u>	1	4	0	5
Downy Woodpecker <u>Dendrocopos pubescens</u>	3	1	0	4
American Goldfinch <u>Spinus tristis</u>	2	2	0	4
Rufous-sided Towhee <u>Pipilo erythrrophthalmus</u>	3	0	1	4

Table (continued)

Species	Male	Female	Undetermined	Total
Hooded Warbler <u>Wilsonia citrina</u>	0	0	0	0
Parula Warbler <u>Parula americana</u>	0	0	0	0
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	0	0	0	0
Unidentified Empidonax Flycatcher <u>Empidonax</u> spp.	0	0	0	0
American Robin <u>Turdus Migratorius</u>	0	0	0	0
Northern Waterthrush <u>Seiurus noveboracensis</u>	0	0	0	0
Mourning Warbler <u>Oporornis philadelphica</u>	0	0	0	0
American Woodcock <u>Philohela minor</u>	0	0	0	0
Field Sparrow <u>Spizella pusilla</u>	0	0	0	0

Table (continued)

Species	Male	Female	Undetermined	Total
Summer Tanager <u>Piranga rubra</u>	0	0	0	0
Worm-eating Warbler <u>Helmintheros vermivorus</u>	0	0	0	0
Pileated Woodpecker <u>Dryocopus pileatus</u>	0	0	0	0
Crested Flycatcher <u>Myiarchus crinitus</u>	0	0	0	0
Black and White Warbler <u>Mniotilla varia</u>	0	0	0	0
Total	--	--	--	348

Table Number of adult birds captured per 100 net hours in woodland and old fields during the breeding season. Numbers in parentheses represents captures from the extended old field that includes rows D-J.

Species	Woodland	Old Fields	Total
Wood Thrush <u>Hylocichla mustelina</u>	6.6	1.6(1.7)	8.2(8.3)
Cardinal <u>Cardinalis cardinales</u>	2.6	5.0(5.8)	7.6(8.4)
Red-eyed Vireo <u>Vireo olivaceus</u>	3.1	0.9(1.3)	4.0(4.4)
Carolina Wren <u>Thryothorus ludovicianus</u>	1.6	3.1(1.5)	4.7(3.1)
Acadian Flycatcher <u>Empidonax virescens</u>	2.0	0.6(0.9)	2.6(2.9)
Ovenbird <u>Seiurus aurocapillers</u>	1.7	0.0(0.0)	1.7(1.7)
Tufted Titmouse <u>Parus bicolor</u>	0.8	0.0(0.2)	0.8(1.0)
Carolina Chickadee <u>Parus Carolinensis</u>	0.6	0.0(0.0)	0.6(0.6)
Kentucky Warbler <u>Oporornis formosus</u>	0.6	0.3(0.7)	0.9(1.3)
Yellow-breasted Chat <u>Icteria virens</u>	0.0	1.4(1.5)	1.4(1.5)
Bluejay <u>Cyanocitta cristata</u>	0.7	0.0(0.0)	0.7(0.7)
Red-bellied Woodpecker <u>Centurus carolinus</u>	0.7	0.0(0.0)	0.7(0.7)
White-eyed Vireo <u>Vireo griseus</u>	0.0	1.3(1.9)	1.3(1.9)
Scarlet Tanager <u>Piranga olivacea</u>	0.6	0.0(0.0)	0.6(0.6)
Prairie Warbler <u>Dendroica discolor</u>	0.0	0.9(1.3)	0.9(1.3)

Table (continued)

Species	Woodland	Old Fields	Total
Catbird <u>Dumetella cardinensis</u>	0.4	0.3(0.2)	0.7(0.6)
Louisiana Waterthrush <u>Seiurus motacilla</u>	0.5	0.0(0.0)	0.5(0.5)
Downy Woodpecker <u>Dendrocopos pubescens</u>	0.3	0.0(0.2)	0.3(0.5)
American Goldfinch <u>Spinus tristis</u>	0.0	1.3(0.9)	1.3(0.9)
Rufous-sided Towhee <u>Pipilo erythrophthalmus</u>	0.0	0.3(0.9)	0.3(0.9)
Indigo Bunting <u>Passerina cyanea</u>	0.0	0.9(0.7)	0.9(0.7)
Eastern Wood Peewee <u>Muscicapa virens</u>	0.3	0.0(0.0)	0.3(0.3)
Common Grackle <u>Quiscalus quiscula</u>	0.3	0.0(0.0)	0.3(0.3)
Hairy Woodpecker <u>Dendrocopos villosus</u>	0.2	0.0(0.0)	0.2(0.2)
Yellow-shafted Flicker <u>Colaptes auratus</u>	0.1	0.3(0.2)	0.4(0.3)
Yellowthroat <u>Geothlypis trichas</u>	0.1	0.3(0.2)	0.4(0.3)
Brown Thrasher <u>Toxostoma rufum</u>	0.1	0.0(0.0)	0.1(0.1)
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	0.0	0.0(0.2)	0.0(0.2)
Brown-headed Cowbird <u>Molothrus ater</u>	0.1	0.0(0.0)	0.1(0.1)
Ruby-throated Hummingbird <u>Archilochus colubris</u>	0.1	0.0(0.0)	0.1(0.1)
Hooded Warbler <u>Wilsonia citrina</u>	0.0	0.0(0.0)	0.0(0.0)

Table (continued)

Species	Woodland	Old Fields	Total
Parula Warbler <u>Parula americana</u>	0.0	0.0(0.0)	0.0(0.0)
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	0.0	0.0(0.0)	0.0(0.0)
Unidentified Empidonax Flycatcher <u>Empidonax</u> spp.	0.0	0.0(0.0)	0.0(0.0)
American Robin <u>Turdus migratorius</u>	0.0	0.0(0.0)	0.0(0.0)
Northern Waterthrush <u>Seiurus noveboracensis</u>	0.0	0.0(0.0)	0.0(0.0)
Mourning Warbler <u>Oporornis philadelphia</u>	0.0	0.0(0.0)	0.0(0.0)
American Woodcock <u>Philohela minor</u>	0.0	0.0(0.0)	0.0(0.0)
Field Sparrow <u>Spizella pusilla</u>	0.0	0.0(0.0)	0.0(0.0)
Summer Tanager <u>Piranga rubra</u>	0.0	0.0(0.0)	0.0(0.0)
Worm-eating Warbler <u>Helmitheros vermivorus</u>	0.0	0.0(0.0)	0.0(0.0)
Pileated Woodpecker <u>Dryocopus pileatus</u>	0.0	0.0(0.0)	0.0(0.0)
Crested Flycatcher <u>Myiarchus crinitus</u>	0.0	0.0(0.0)	0.0(0.0)
Black and White Warbler <u>Mniotilla varia</u>	0.0	0.0(0.0)	0.0(0.0)
Total	24.1	18.5(20.1)	42.6(44.2)

Table Number of adult birds captured per 100 net hours in old fields during the breeding season. Numbers in parentheses represents captures from the extended old field that includes rows D-J.

(1973)

Species	NB*	R**	Total
Wood Thrush <u>Hylocichla mustelina</u>	1.3(1.3)	0.3(0.4)	1.6(1.7)
Cardinal <u>Cardinalis cardinales</u>	4.1(5.1)	0.9(0.7)	5.0(5.8)
Red-eyed Vireo <u>Vireo olivaceus</u>	0.9(1.3)	0.0(0.0)	0.9(1.3)
Carolina Wren <u>Thryothorus ludovicianus</u>	2.5(1.1)	0.6(0.4)	3.1(1.5)
Acadian Flycatcher <u>Empidonax virescens</u>	0.6(0.9)	0.0(0.0)	0.6(0.9)
Ovenbird <u>Seiurus aurocapillus</u>	--	--	0.0(0.0)
Tufted Titmouse <u>Parus bicolor</u>	0.0(0.0)	0.0(0.2)	0.0(0.2)
Carolina Chickadee <u>Parus carolinensis</u>	0.9(0.7)	0.0(0.0)	0.9(0.7)
Kentucky Warbler <u>Oporornis formosus</u>	0.3(0.7)	0.0(0.0)	0.3(0.7)
Yellow-breasted Chat <u>Icteria virens</u>	0.8(1.1)	0.6(0.4)	1.4(1.5)
Bluejay <u>Cyanocitta cristata</u>	--	--	0.0(0.0)
Red-bellied Woodpecker <u>Centurus carolinus</u>	--	--	0.0(0.0)
White-eyed Vireo <u>Vireo griseus</u>	1.3(1.9)	0.0(0.0)	1.3(1.9)

Table (continued)

Species	NB*	R**	Total
Ruby-throated Hummingbird <u>Archilochus colubris</u>	--	--	0.0(0.0)
Hooded Warbler <u>Wilsonia citrina</u>	--	--	0.0(0.0)
Parula Warbler <u>Parula americana</u>	--	--	0.0(0.0)
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	--	--	0.0(0.0)
Unidentified Empidonax Flycatcher <u>Empidonax</u> spp.	--	--	0.0(0.0)
American Robin <u>Turdus migratorius</u>	--	--	0.0(0.0)
Northern Waterthrush <u>Seiurus noveboracensis</u>	--	--	0.0(0.0)
Mourning Warbler <u>Oporornis philadelphia</u>	--	--	0.0(0.0)
American Woodcock <u>Philohela minor</u>	--	--	0.0(0.0)
Field Sparrow <u>Spizella pusilla</u>	--	--	0.0(0.0)
Summer Tanager <u>Piranga rubra</u>	--	--	0.0(0.0)
Worm-eating Warbler <u>Helmitheros vermivorus</u>	--	--	0.0(0.0)
Pileated Woodpecker <u>Dryocopus pileatus</u>	--	--	0.0(0.0)
Crested Flycatcher <u>Myiarchus crinitus</u>	--	--	0.0(0.0)

Table (continued)

Species	NB*	R**	Total
Scarlet Tanager <u>Piranga olivacea</u>	--	--	0.0(0.0)
Prairie Warbler <u>Dendroica discolor</u>	0.6(1.1)	0.3(0.2)	0.9(1.3)
Catbird <u>Dumetella carolinensis</u>	0.3(0.2)	0.0(0.0)	0.3(0.2)
Louisiana Waterthrush <u>Seiurus motacilla</u>	--	--	0.0(0.0)
Downy Woodpecker <u>Dendrocopos pubescens</u>	0.0(0.2)	0.0(0.0)	0.0(0.2)
American Goldfinch <u>Spinus tristis</u>	1.3(0.9)	0.0(0.0)	1.3(0.9)
Rufous-sided Towhee <u>Pipilo erythrrophthalmus</u>	0.3(0.9)	0.0(0.0)	0.3(0.9)
Indigo Bunting <u>Passerina cyanea</u>	0.9(0.7)	0.0(0.0)	0.9(0.7)
Eastern Wood Peewee <u>Muscicapa virens</u>	--	--	0.0(0.0)
Common Grackle <u>Quiscalus quiscula</u>	--	--	0.0(0.0)
Hairy Woodpecker <u>Dendrocopos villosus</u>	--	--	0.0(0.0)
Yellow-shafted Flicker <u>Colaptes auratus</u>	0.3(0.2)	0.0(0.0)	0.3(0.2)
Yellowthroat <u>Geothlypis trichas</u>	0.3(0.2)	0.0(0.0)	0.3(0.2)
Brown Thrasher <u>Toxostoma rufum</u>	--	--	0.0(0.0)
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	0.0(0.2)	0.0(0.0)	0.0(0.2)
Brown-headed Cowbird <u>Molothrus ater</u>	--	--	0.0(0.0)

Table (continued)

Species	NB*	R**	Total
Black and White Warbler <u>Mniotilla varia</u>	--	--	0.0(0.0)
Total	16.7(18.7)	2.7(2.3)	19.4(21.0)

\*NB - Newly banded

\*\* R - Recatures

Table Number of adult birds captured per 100 net hours in Woodland during the breeding season. (1973).

Species	NB*	R**	Total
Wood Thrush <u>Hylocichla mustelina</u>	4.0	2.6	6.6
Cardinal <u>Cardinalis cardinales</u>	1.8	0.8	2.6
Red-eyed Vireo <u>Vireo olivaceus</u>	2.3	0.8	3.1
Carolina Wren <u>Thryothorus ludovicianus</u>	1.1	0.5	1.6
Acadian Flycatcher <u>Empidonax virescens</u>	1.6	0.4	2.0
Ovenbird <u>Seiurus aurocapillus</u>	1.2	0.5	1.7
Tufted Titmouse <u>Parus bicolor</u>	0.2	0.6	0.8
Carolina Chickadee <u>Parus carolinensis</u>	0.5	0.1	0.6
Kentucky Warbler <u>Oporornis formosus</u>	0.5	0.1	0.6
Yellow-breasted Chat <u>Icteria virens</u>	0	0	0
Bluejay <u>Cyanocitta cristata</u>	0.6	0.1	0.7
Red-bellied Woodpecker <u>Centurus carolinus</u>	0.6	0.1	0.7
White-eyed Vireo <u>Vireo griseus</u>	0	0	0
Scarlet Tanager <u>Piranga olivacea</u>	0.2	0.4	0.6

Table (continued)

Species	NB*	R**	Total
Hooded Warbler <u>Wilsonia citrina</u>	0	0	0
Parula Warbler <u>Parula americana</u>	0	0	0
Blue-grey Gnatcatcher <u>Polioptila caerulea</u>	0	0	0
Unidentified Empidonax Flycatcher <u>Empidonax</u> spp.	0	0	0
American Robin <u>Turdus migratorius</u>	0	0	0
Northern Waterthrush <u>Seiurus noveboracensis</u>	0	0	0
Mourning Warbler <u>Oporornis philadelphia</u>	0	0	0
American Woodcock <u>Philohela minor</u>	0	0	0
Field Sparrow <u>Spizella pusilla</u>	0	0	0
Summer Tanager <u>Piranga ruba</u>	0	0	0
Worm-eating Warbler <u>Helmintheros vermivorus</u>	0	0	0
Pileated Woodpecker <u>Dryocopus pileatus</u>	0	0	0
Crested Flycatcher <u>Myiarchus crinitus</u>	0	0	0
Black and White Warbler <u>Mniotilla varia</u>	0	0	0
Total	16.7	7.4	24.1

\*NB - Newly banded

\*\* R - Recaptures

Table (continued)

Species	NB*	R**	Total
Prairie Warbler <u>Dendroica discolor</u>	0	0	0
Catbird <u>Dumetella cardinensis</u>	0.4	0	0.4
Louisiana Waterthrush <u>Seiurus motacilla</u>	0.3	0.2	0.5
Downy Woodpecker <u>Dendrocopos pubescens</u>	0.1	0.2	0.3
American Goldfinch <u>Spinus tristis</u>	0	0	0
Rufous-sided Towhee <u>Pipilo erythrophthalmus</u>	0	0	0
Indigo Bunting <u>Passerina cyanea</u>	0	0	0
Eastern Wood Peewee <u>Muscicapa virens</u>	0.3	0	0.3
Common Grackle <u>Quiscalus quiscula</u>	0.3	0	0.3
Hairy Woodpecker <u>Dendrocopos villosus</u>	0.2	0	0.2
Yellow-shafted Flicker <u>Colaptes auratus</u>	0.1	0	0.1
Yellowthroat <u>Geothlypis trichas</u>	0.1	0	0.1
Brown Thrasher <u>Toxostoma rufum</u>	0.1	0	0.1
Yellow-billed Cuckoo <u>Coccyzus americanus</u>	0	0	0
Brown-headed Cowbird <u>Molothrus ater</u>	0.1	0	0.1
Ruby-throated Hummingbird <u>Archilochus colubris</u>	0.1	0	0.1

### Fish Population Data from Muddy Creek

Fish Trapping: Three cylindrical nylon net fish traps were maintained in Muddy Creek at station 8, map 2. They were positioned so that one faced downstream, one upstream, and one crosswise. The traps had double funnel entrances with a 25 cm inner diameter. Nylon netting had 1.2 by 0.6 cm mesh openings. Traps were attended every 48 or 72 hours.

Principal Investigator: Robert L. Cory, U. S. Geological Survey, Edgewater, Maryland.

Research Funding: U. S. Geological Survey and Program for Research Applied to National Needs of the National Science Foundation.

Muddy Creek Fish Trapping Data

	Total Number (Specimens Captured)	Total Biomass (grams wet weight)	Days of 1973	75	79	81	85	87	95	103	109	116	123	130
<i>Lepomis gibbosus</i>														
Pumpkin seed	11	749	43											
<u>total number</u>	--	10368	513	35	1028									
<u>total biomass</u>	--													
<i>Lepomis</i> sp.	--	3	3	--	--				1	7	6	--	1	--
<u>total number</u>	--	31	104	--	--				4	20.5	550	--	81	--
<u>total biomass</u>	--													
<i>Fundulus heteroclitus</i>														
Common killifish	--	42	5	2	--				--	5	1	--	--	--
<u>total number</u>	--	99	24	13	--				--	20.5	3	--	--	--
<u>total biomass</u>	--													
<i>Notemigonus crysoleucas</i>														
Shiner	--	3	--	--	--				--	--	2	--	--	--
<u>total number</u>	--	32	--	--	--				--	100	--	--	--	--
<u>total biomass</u>	--													
<i>Ictalurus nebulosus</i>														
Brown catfish	30	500	9	145	424	2076				18	12	26	40	11
<u>total number</u>	--	5756	71	7463	16340	33489				721	909	2262	15761	4008
<u>total biomass</u>	--													

Table (continued)

Table (continued)

Days of 1973

	137	145	152	159	168
<i>Lepomis gibbosus</i>					
Pumpkin seed	11	10	40	24	13
total number	650	513	2665	904	461
total biomass					
<i>Lepomis</i> sp.	--	4	1	2	--
total number	--	506	172	100	--
total biomass	--				
<i>Fundulus heteroclitus</i>					
Common killifish	--	--	2	--	8.5
total number	--	--	9	--	--
total biomass	--				
<i>Notemigonus crysoleucas</i>					
Shiner	--	1	--	11	
total number	--	5	--	50	
total biomass	--				
<i>Ictalurus nebulosus</i>					
Brown catfish	10	3	6	1	4
total number	2022	800	1665	338	1130
total biomass					
<i>Morone americanus</i>					
total number	29	41	20	8	8
total biomass	2910	3300	1959	597	497

Table (continued)

Days of 1973

	137	145	152	159	168
<i>Perca flavescens</i>					
Yellow perch	--	--	--	--	--
total number	--	--	--	--	--
total biomass	--	--	--	--	--
<i>Anguilla rostrata</i>					
Common eel	--	--	--	--	1
total number	--	--	--	--	
total biomass	--	--	--	--	900
<i>Cyprinus carpio</i>					
Carp	--	--	--	--	
total number	--	--	--	--	
total biomass	--	--	--	--	
<i>Callinectes sapidus</i>					
Blue crab	4	--	--	--	
total number	53	--	--	--	
total biomass					



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